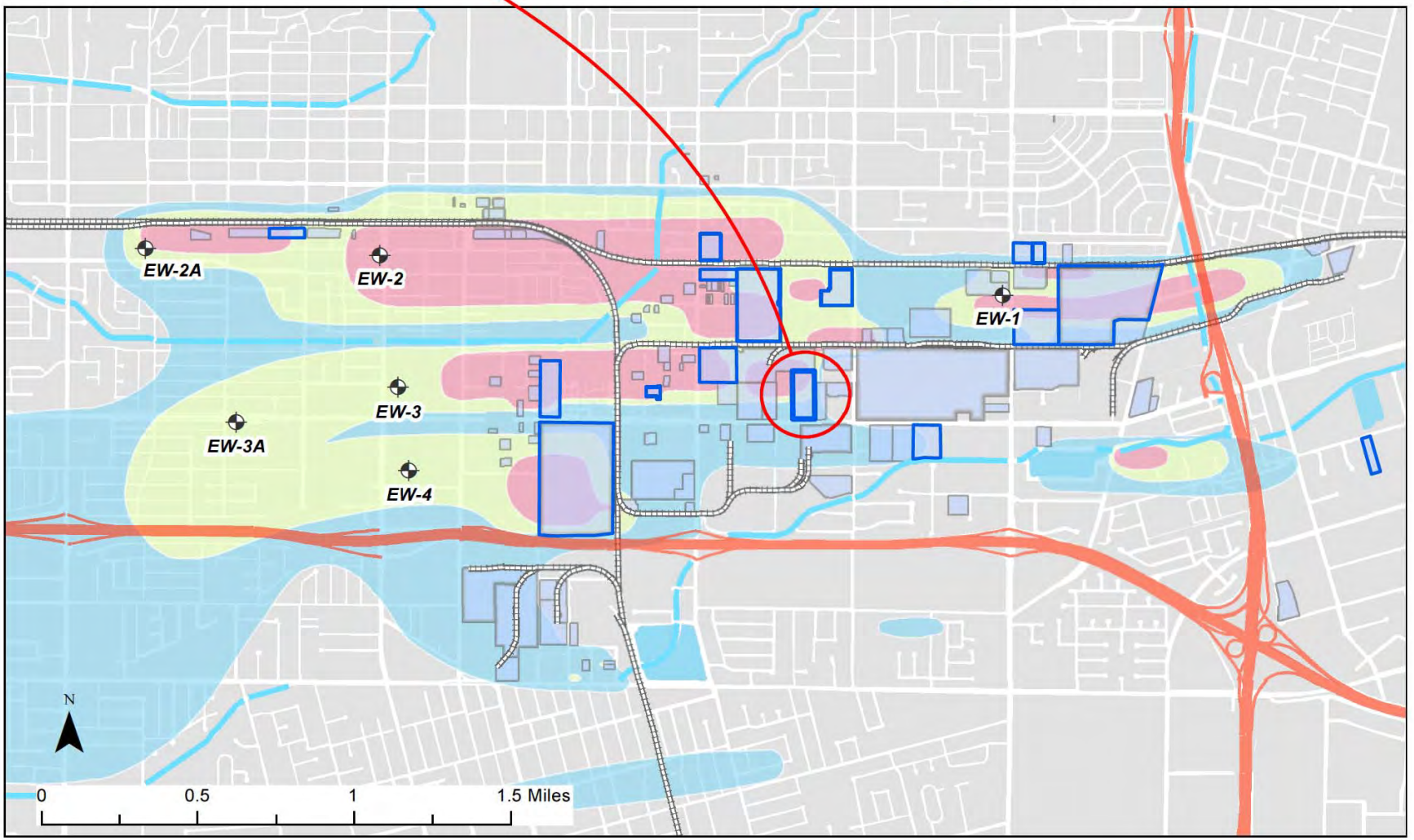
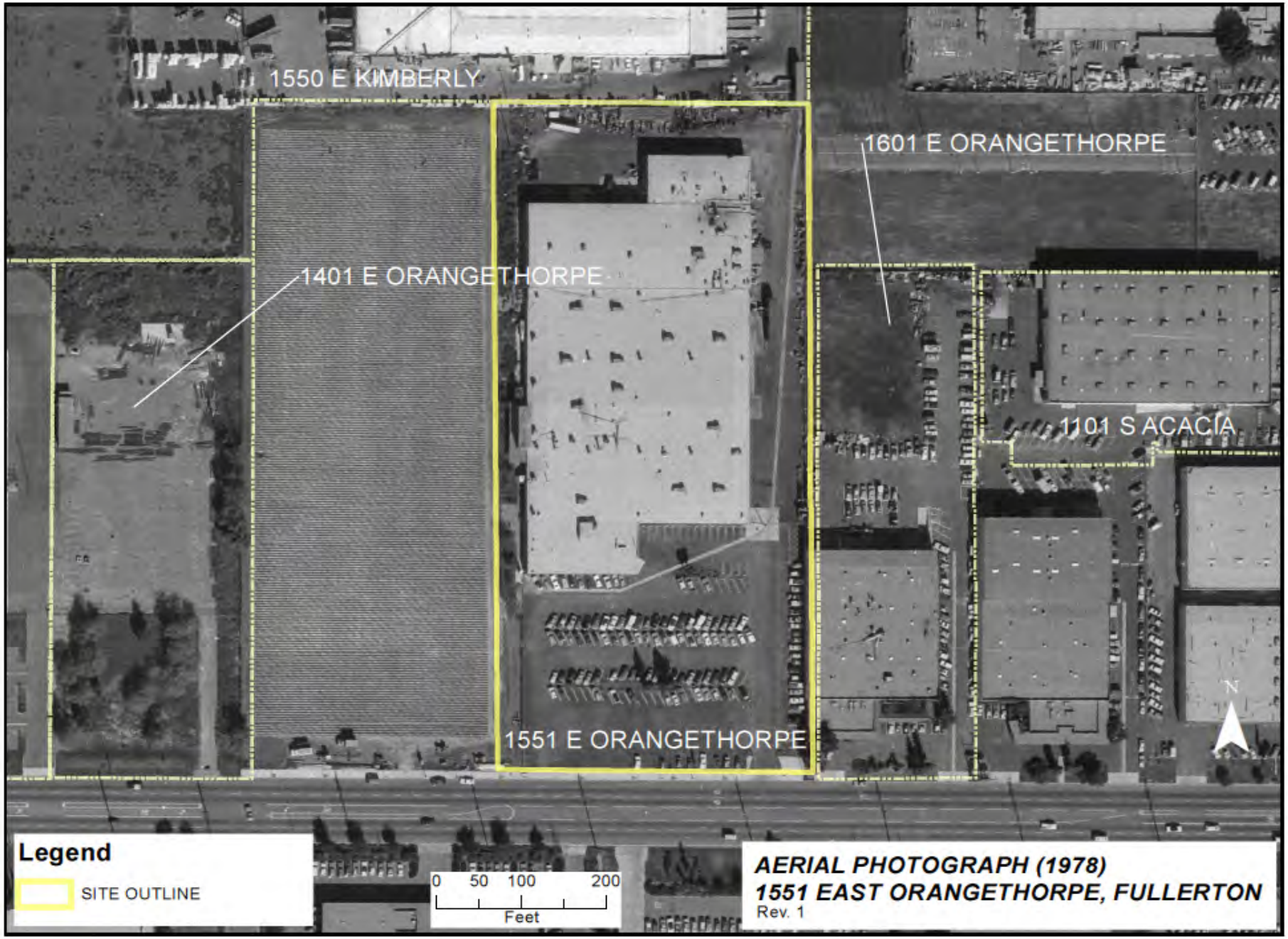
ARNOLD ENGINEERING

1551 East Orangethorpe Avenue, Fullerton, CA

ARNOLD ENGINEERING
1551 E. ORANGETHORPE AVE.




1550 E KIMBERLY
1601 E ORANGETHORPE
1401 E ORANGETHORPE
1101 S ACACIA
1551 E ORANGETHORPE
N
Legend
SITE OUTLINE
0 50 100 200
Feet
AERIAL PHOTOGRAPH (1978)
1551 EAST ORANGETHORPE, FULLERTON
Rev. 1

Site History

- Pre-1956 – Undeveloped
- 1956 to 1960 – Ensign Carburetor reportedly operated a carburetor repair and rebuilding operation
- 1960 to 1988 – Arnold Engineering/Integrated Specialties performed etching of metals for the electronics industry
- Between October 1973 and 1974 – Extension of north side of building had been constructed

March 1959

December 1978

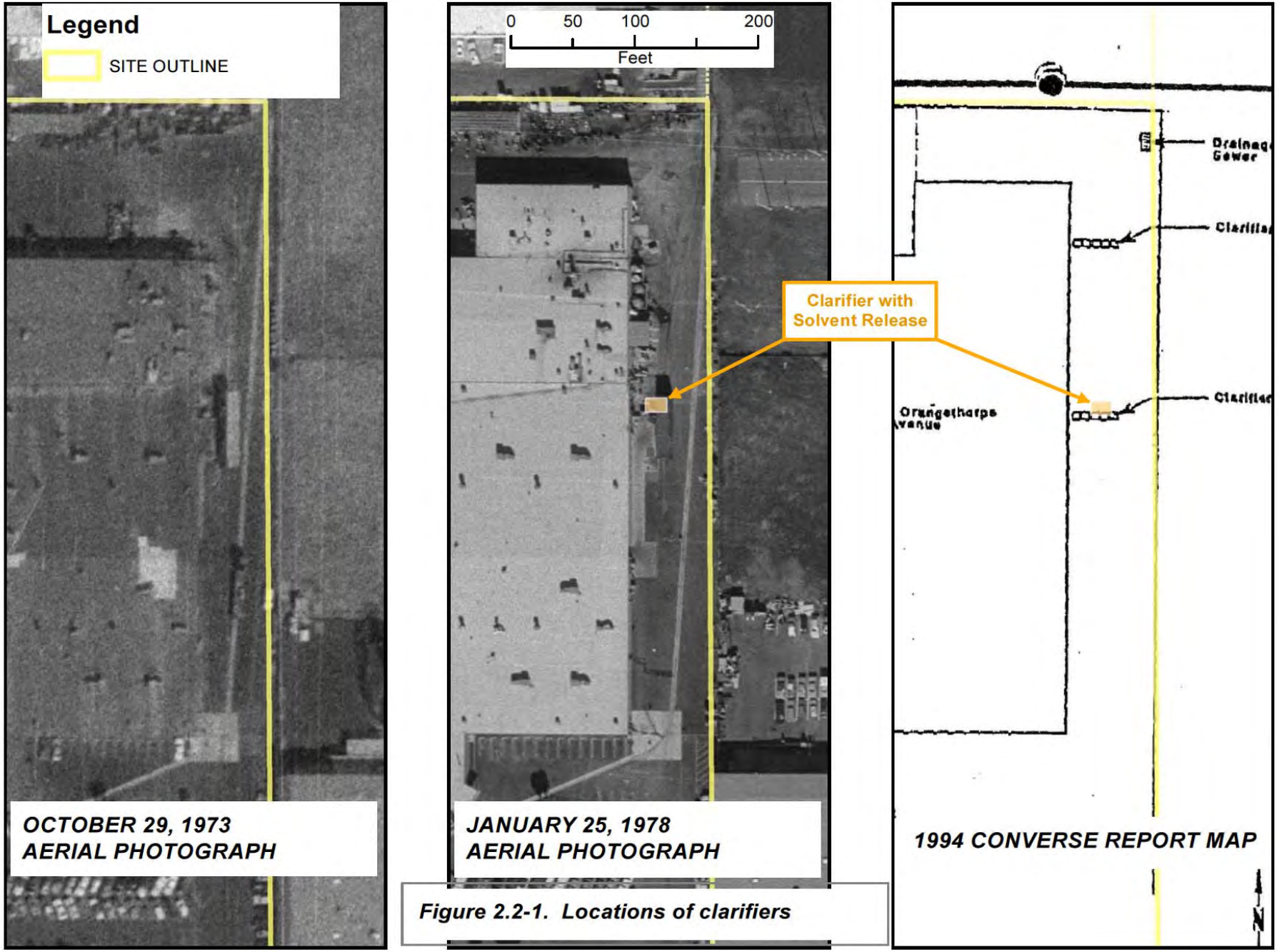
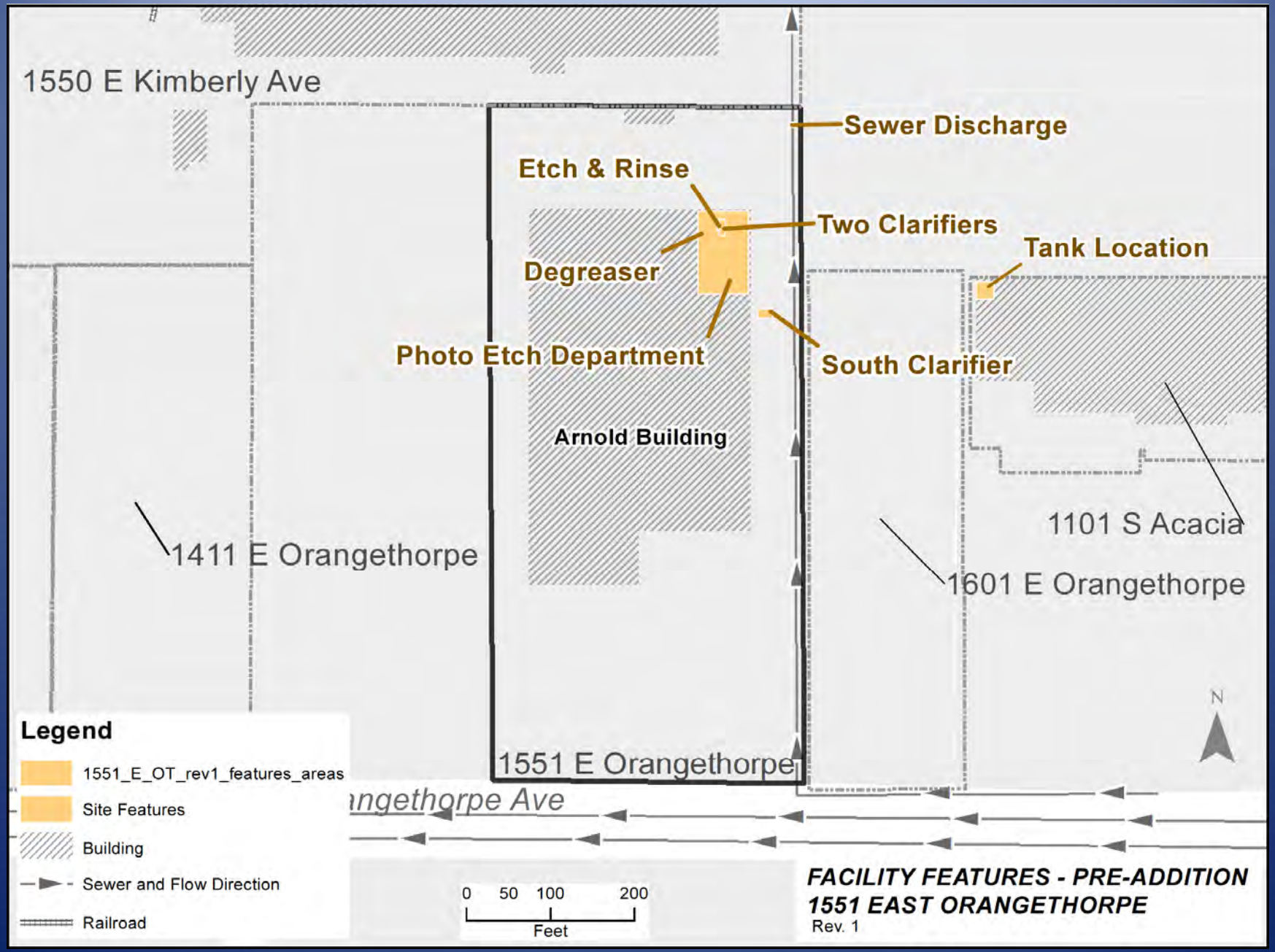


Figure 2.2-1. Locations of clarifiers


1550 E Kimberly Ave
Sewer Discharge
Etch & Rinse
Two Clarifiers
Tank Location
Degreaser
Photo Etch Department
South Clarifier
Arnold Building
1411 E Orangethorpe
1101 S Acacia
1601 E Orangethorpe
1551 E Orangethorpe
ngethorpe Ave
N
Legend
1551_E_OT_rev1_features_areas
Site Features
Building
Sewer and Flow Direction
Railroad
0 50 100 200
Feet
FACILITY FEATURES - PRE-ADDITION
1551 EAST ORANGETHORPE
Rev. 1

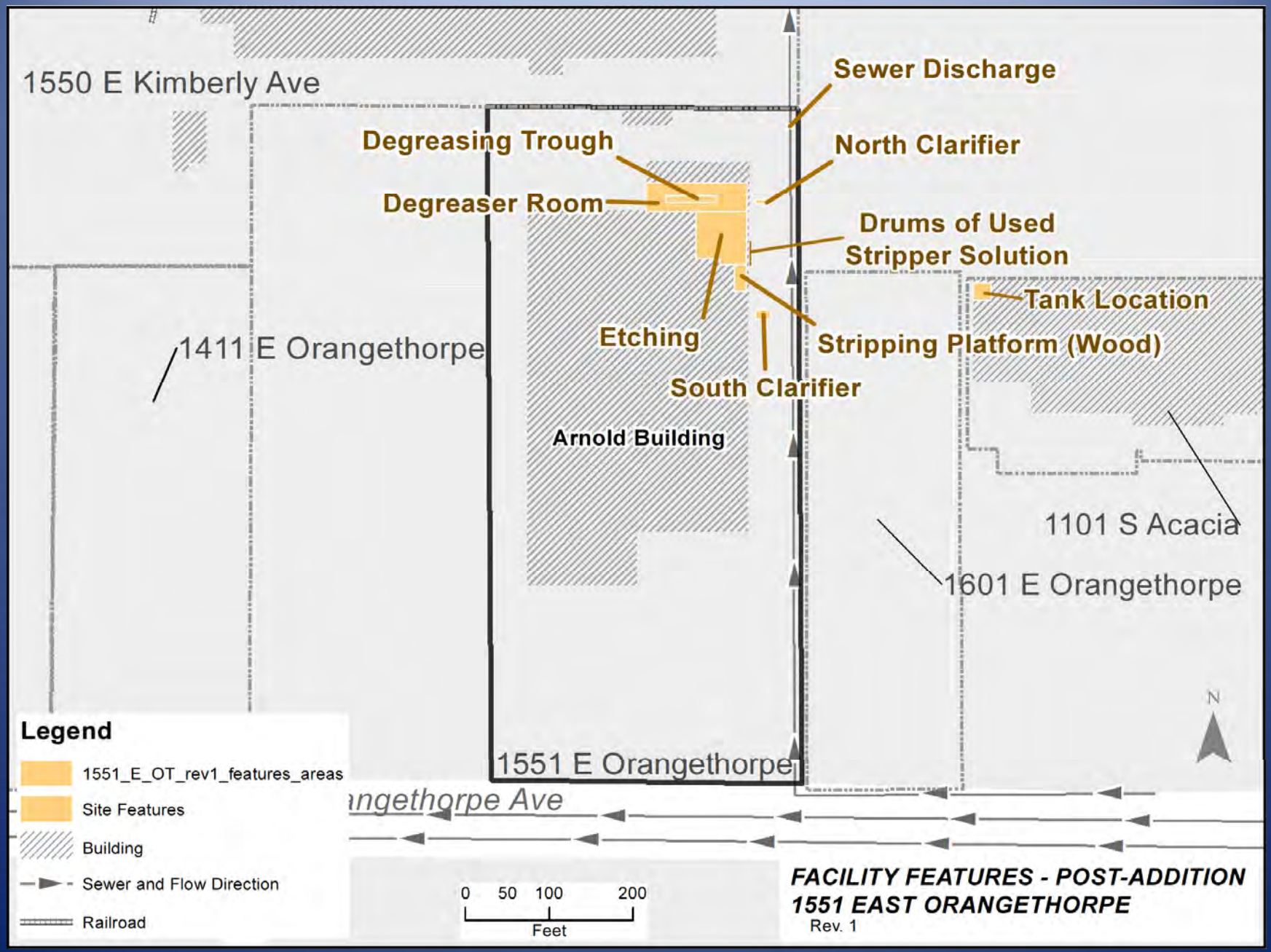

1550 E Kimberly Ave
Sewer Discharge
Degreasing Trough
North Clarifier
Degreaser Room
Drums of Used
Stripper Solution
Tank Location
1411 E Orangethorpe
Etching
Stripping Platform (Wood)
South Clarifier
Arnold Building
1101 S Acacia
1601 E Orangethorpe
N
Legend
1551_E_OT_rev1_features_areas
Site Features
Building
Sewer and Flow Direction
Railroad
1551 E Orangethorpe
ngethorpe Ave
0 50 100 200
Feet
FACILITY FEATURES - POST-ADDITION
1551 EAST ORANGETHORPE
Rev. 1

Exhibit 747

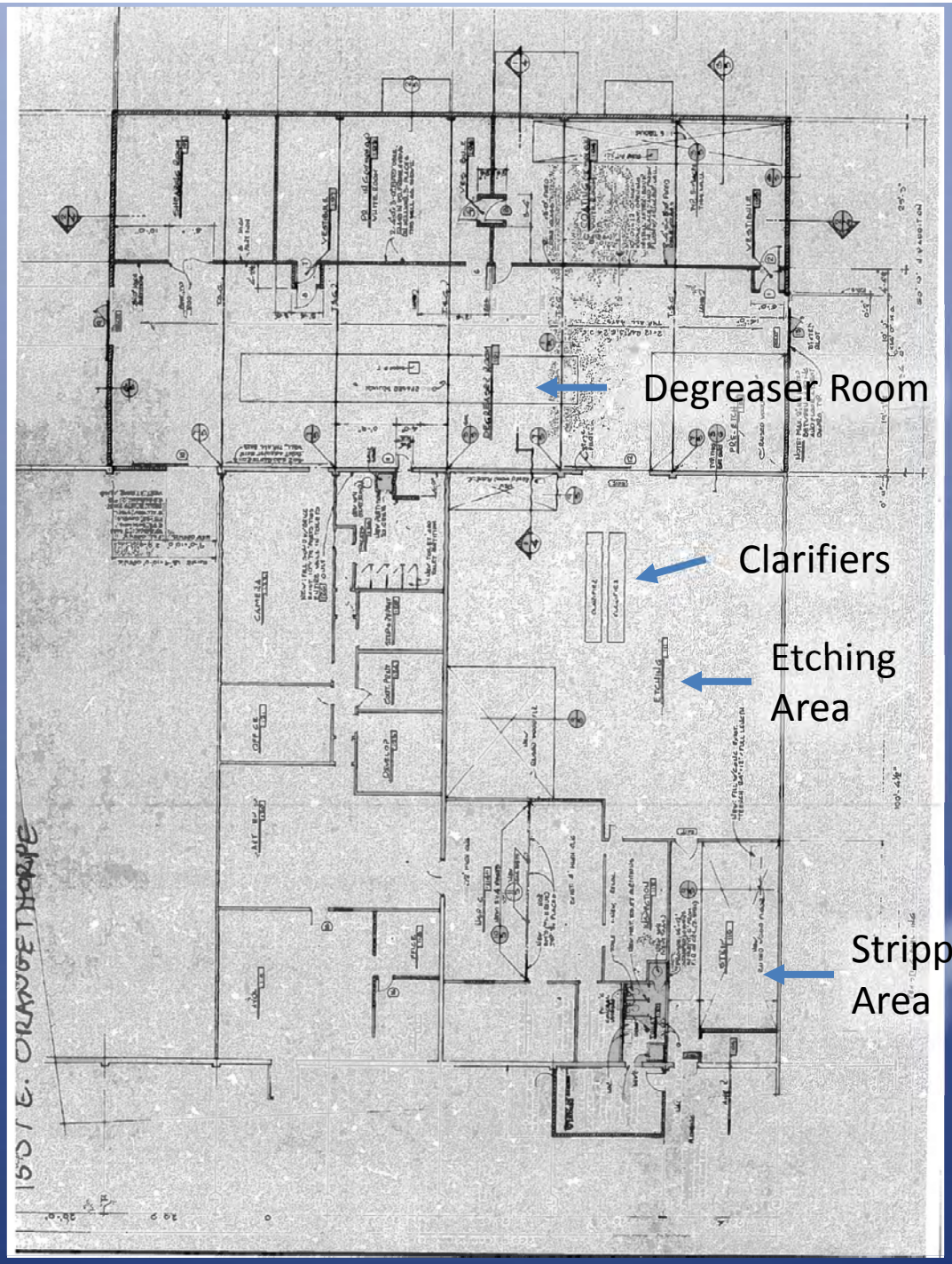
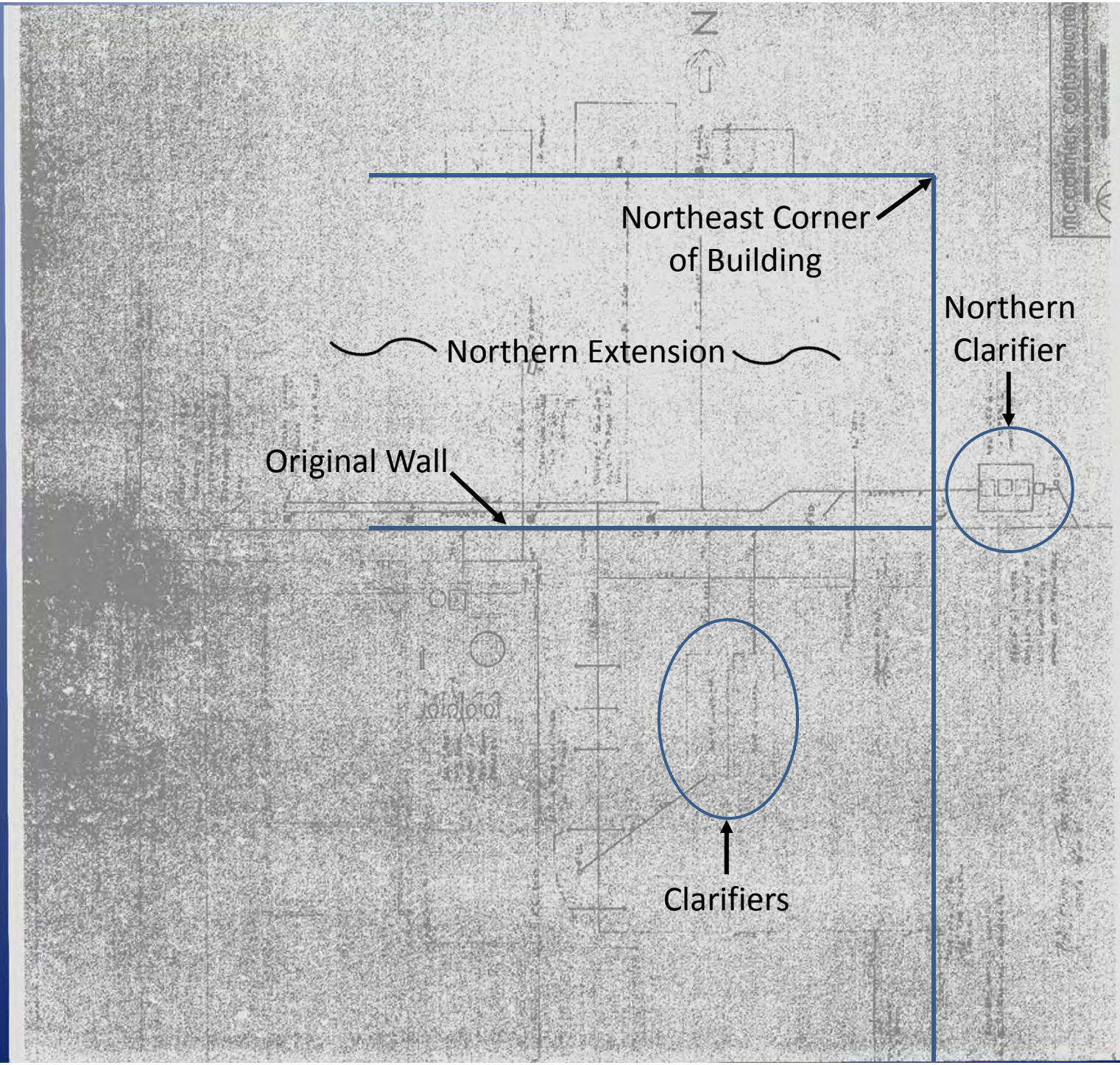


Exhibit 748


Northeast Corner of Building
Northern Clarifier
Northern Extension
Original Wall
Clarifiers

Site History

- 1985 – Reported release of sludge containing iron, nickel, and copper
- 1989 to 1992 – Eye Encounter (parent company of Woodmill Products) occupied site
- 1989 to 1995 – Johnson Controls stored battery casings at the site

Site History

- 1990 to at least 1992 – James Gile & Co Inc. and Woodmill Products occupied the site; Woodmill reportedly manufactured picture frames and performed silk screening operations
- 1992 – Marion Mfg, Inc. operated at site
- 1992 to 1993 – Princess Frames operated at site

Site History

- 1992 – Site Assessment on behalf of Red Eagle Properties identified two below-ground clarifiers
- 1994 – Red Eagle Properties removed the two clarifiers (both partially filled with liquid – capacity estimated at 2,000 gallons of liquid each); single soil sample from southern clarifier pit contained significant levels of PCE (27,000 ppb) and Total Recoverable Petroleum Hydrocarbons (TRPH)

Site History

- 1994 to 1995 – Additional soil sampling in vicinity of southern clarifier revealed high levels of PCE, TCE, and 1,1-DCE in soil to 105 feet bgs; no groundwater samples collected
- 1995 – Two SVE wells installed at southern clarifier were operated for 3 months; confirmation soil samples showed high remaining concentrations of PCE, TCE, and 1,1,1,-TCA

Site History

- December 1995 – RWQCB determined Red Eagle Properties was not responsible for site contamination
- 1995 to present – Elden Collections/Country Affaire, Inc. leases site, manufactures wooden furniture
- 2006 – Groundwater samples in wells from Johnson Controls site immediately downgradient of Arnold Engineering contained high concentrations of TCE, 1,1-DCE, and 1,4-dioxane

Site History

- 2007 – Vapor survey indicates multiple sources of PCE, TCE, 1,1,1-TCA, and 1,1-DCE within and near the building:
  - Southern clarifier area
  - Eastern side of building (etching area)
  - Northern addition (metal cleaning and coating area)
  - Northern drum storage area
  - Northern property boundary

Site History

- 2007 – Six SVE wells and four passive wells installed
- 2008 – Remediation system operated for 11 months, removing 49.5 lbs of PCE and 6.6 lbs of TCE; concentrations in confirmation samples remained high
- May 2009 – Remediation system restarted, two additional SVE wells installed; Total amount removed by October - 73.75 lbs of PCE and 7.45 lbs of TCE

Ensign Carburetor (1956-1960)

- First industrial occupant of the site
- Reportedly operated a carburetor repair and rebuilding operations
- Solvent usage by Ensign Carburetor is unknown

Arnold Engineering (1960-1988)

- Arnold Engineering and its successor company, Integrated Specialties, performed etching of metal for the electronics industry
- Process involved cutting metal parts, cleaning, coating with a photoresist mask, degreasing, coating, baking/hardening, etching, and stripping
- Chemical use included chlorinated solvent degreasers, caustics, acids, water rinses, ferric chloride

Arnold Solvent Use Overview

- Metal sheets received and cut to size
- Cut metal parts were degreased via heated spray degreasers
- Degreased parts were further cleaned in open tanks using caustics, rinses, and unidentified cleaning solvents

Arnold Solvent Use Overview

- Clean metal parts were coated with resist coating
- Coated parts were polymerized with infrared light and printed
- Printed metal parts were treated in the degreasers to remove the unpolymerized coating

Arnold Solvent Use Overview

- UV light was used in a bake oven to harden the coating on the degreased sheets
- The sheets were etched with ferric chloride
- The remaining photo resist was stripped in open dip tanks filled with PCE

Arnold Solvent Use - Degreasers

- Deposition by Dan Hopen indicates the degreaser solution was TCE and/or 1,1,1-TCA
- Degreasers were emptied once per week by maintenance staff into 55-gallon drums
- New and used degreaser solvent was stored outside north side of building

Arnold Solvent Use – Stripping Area

- Deposition by Dan Hopen indicates the stripper solution was PCE
- Stripper dip tanks were drained into 5-gallon buckets
- Waste solvent was transferred to 55-gallon drums and stored outside on the east side of building

Arnold Solvent Use – Stripping Area

- Stripper solution reportedly spilled frequently
- Stripped metal plates were allowed to drip onto a wooden platform that was rinsed approximately every 2 hours; platform was constructed above an uncoated concrete floor with a drain

Exhibit 537

Arnold Solvent Use - Permitting

- Numerous permits obtained for use of solvents beginning in 1961

Exhibit 538

1961 Permit to Operate Two Degreasers

AIR POLLUTION CONTROL DISTRICT

COUNTY OF ORANGE

PERMIT

IS HEREBY GRANTED TO

ARNOLD ENGINEERING CO.

TO OPERATE

2 - DEGREASERS W/LIP EXHAUSTED TO ROOF

1 Degreaser removed 1-11-79

located at

1551 E. Orangethorpe, Fullerton, California

SUBJECT TO THE FOLLOWING CONDITIONS

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 20, CHAPTER 2, ARTICLE 3, OF THE HEALTH AND SAFETY CODES OF THE STATE OF CALIFORNIA OR THE RULES AND REGULATIONS OF THE AIR POLLUTION CONTROL DISTRICT.

DATE 11/3/61

PERMIT NO 1253

WILLIAM FITCHEN
AIR POLLUTION CONTROL OFFICER

By: _____
CHAS. W. DOUGAN, Engineer (Title)

REVOCABLE AND NOT TRANSFERABLE

Exhibit 539

1970 Permit to Operate Two Baron Blakeslee Degreasers (1 of 2)

AIR POLLUTION CONTROL DISTRICT

COUNTY OF ORANGE

PERMIT

IS HEREBY GRANTED TO

THE ARNOLD ENGINEERING CO. PACIFIC DIV.,

TO OPERATE

BARON BLAKESLEE DEGREASER SER. NO. 6230, 9-KVA,

located at

1551 E. Orangethorpe Ave., Fullerton, Calif.

SUBJECT TO THE FOLLOWING CONDITIONS

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 20, CHAPTER 2, ARTICLE 3, OF THE HEALTH AND SAFETY CODES OF THE STATE OF CALIFORNIA OR THE RULES AND REGULATIONS OF THE AIR POLLUTION CONTROL DISTRICT.

DATE June 1, 1970

WILLIAM FITCHEN
AIR POLLUTION CONTROL OFFICER

PERMIT NO. 70-2190

By: _____
Douglas F. Jeffrey (Title)
Air Pollution Engineer

REVOCABLE AND NOT TRANSFERABLE

Exhibit 540

1970 Permit to Operate Two Baron Blakeslee Degreasers (2 of 2)

AIR POLLUTION CONTROL DISTRICT
COUNTY OF ORANGE

PERMIT

IS HEREBY GRANTED TO

THE ARNOLD ENGINEERING CO. PACIFIC DIV.,

TO OPERATE

BARON BLAKESLEE DEGREASER SER. NO. 5918, 12-KVA

located at

1551 E. Orangethorpe Ave., Fullerton, CAlif.

SUBJECT TO THE FOLLOWING CONDITIONS

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 20, CHAPTER 2, ARTICLE 3, OF THE HEALTH AND SAFETY CODES OF THE STATE OF CALIFORNIA OR THE RULES AND REGULATIONS OF THE AIR POLLUTION CONTROL DISTRICT.

DATE **June 1, 1970**

PERMIT NO. **70-2192**

WILLIAM FITCHEN
AIR POLLUTION CONTROL OFFICER

By: **Douglas F. Jeffrey** (Title)
Air Pollution Engineer

REVOCABLE AND NOT TRANSFERABLE

Exhibit 541

1975 Permit to Operate Two Delta Degreasers (1 of 2)

AIR POLLUTION CONTROL DISTRICT

COUNTY OF ORANGE

PERMIT

IS HEREBY GRANTED TO

ARNOLD ENGINEERING CO.

TO OPERATE

Delta degreaser DH525 (series number D4020)
36" x 68" x 78" (830 gallon capacity)
located at
1551 E. Orangethorpe, Fullerton, Calif.

SUBJECT TO THE FOLLOWING CONDITIONS

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 20, CHAPTER 2, ARTICLE 3, OF THE HEALTH AND SAFETY CODES OF THE STATE OF CALIFORNIA OR THE RULES AND REGULATIONS OF THE AIR POLLUTION CONTROL DISTRICT.

DATE 4-23-75

H. G. OSBORNE
AIR POLLUTION CONTROL OFFICER

PERMIT NO. 75-4479

By: _____ (Title)
Bob Nishimura
Air Pollution Engineer

F 0116-14 1

REVOCABLE AND NOT TRANSFERABLE

Exhibit 542

1975 Permit to Operate Two Delta Degreasers (2 of 2)

AIR POLLUTION CONTROL DISTRICT

COUNTY OF ORANGE

PERMIT

IS HEREBY GRANTED TO

ARNOLD ENGINEERING CO.

TO OPERATE

Delta degreaser DH525 (series number D3062)
36" x 68" x 78" (830 gallon capacity)
located at
1551 E. Orangethorpe, Fullerton, Calif.

SUBJECT TO THE FOLLOWING CONDITIONS

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 20, CHAPTER 2, ARTICLE 3, OF THE HEALTH AND SAFETY CODES OF THE STATE OF CALIFORNIA OR THE RULES AND REGULATIONS OF THE AIR POLLUTION CONTROL DISTRICT.

DATE 4-23-75

H. G. OSBORNE
AIR POLLUTION CONTROL OFFICER

PERMIT NO. 75-4480

By: _____
Bob Nishimura (Title)
Air Pollution Engineer

F 0118-14 1

REVOCABLE AND NOT TRANSFERABLE

Exhibit 543

1976 Permit to Operate Custom Degreaser

SOUTHERN CALIFORNIA AIR POLLUTION CONTROL DISTRICT

~~ORANGE COUNTY ZONE~~ SOUTHERN ZONE

PERMIT

IS HEREBY GRANTED TO

THE ARNOLD ENGINEERING COMPANY

TO OPERATE

Solvent degreaser, 24" wide x 24" long x 30" high; 3 KW electric heater, custom made

located at

1551 E. Orangethorpe, Fullerton, CA 92634

SUBJECT TO THE FOLLOWING CONDITIONS

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 20, CHAPTER 2, ARTICLE 3, OF THE HEALTH AND SAFETY CODES OF THE STATE OF CALIFORNIA OR THE RULES AND REGULATIONS OF THE AIR POLLUTION CONTROL DISTRICT

DATE June 17, 1976

H. G OSBORNE

AIR POLLUTION CONTROL OFFICER

PERMIT NO. 76-6303

By: _____ (Title)

WARREN TALBOT

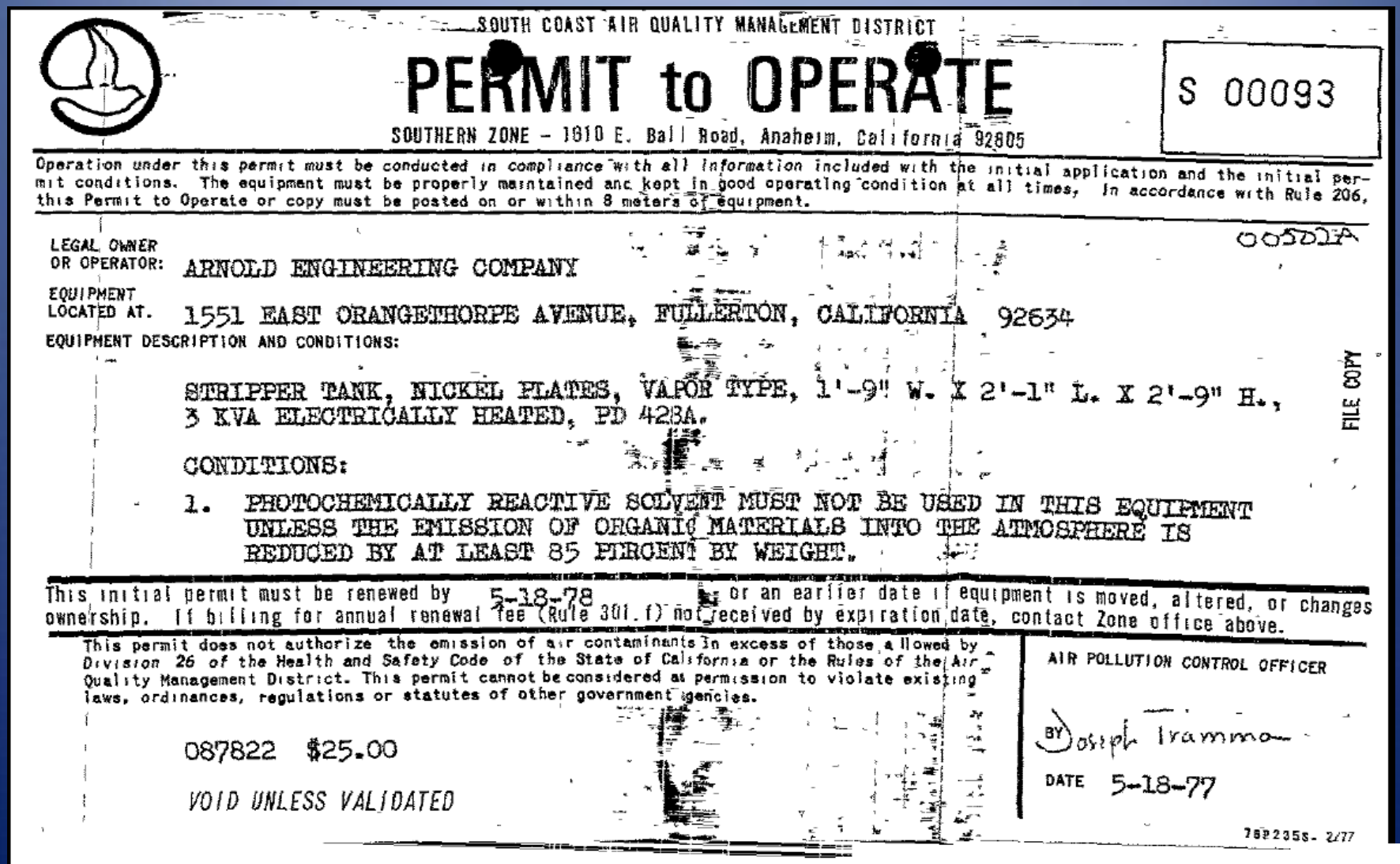
CHIEF ENGINEERING & ANALYSIS

F0250-45

REVOCABLE AND NOT TRANSFERABLE

Exhibit 545

1977 Permit to Operate
Four Stripper Tanks (1 of 4)



SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

PERMIT to OPERATE

SOUTHERN ZONE – 1010 E. Ball Road, Anaheim, California 92805

S 00093

Operation under this permit must be conducted in compliance with all information included with the initial application and the initial permit conditions. The equipment must be properly maintained and kept in good operating condition at all times, in accordance with Rule 206, this Permit to Operate or copy must be posted on or within 8 meters of equipment.

005021A

LEGAL OWNER OR OPERATOR: ARNOLD ENGINEERING COMPANY

EQUIPMENT LOCATED AT: 1551 EAST ORANGETHORPE AVENUE, FULLERTON, CALIFORNIA 92634

EQUIPMENT DESCRIPTION AND CONDITIONS:

STRIPPER TANK, NICKEL PLATES, VAPOR TYPE, 1'-9" W. X 2'-1" L. X 2'-9" H., 3 KVA ELECTRICALLY HEATED, PD 423A.

CONDITIONS:

1. PHOTOCHEMICALLY REACTIVE SOLVENT MUST NOT BE USED IN THIS EQUIPMENT UNLESS THE EMISSION OF ORGANIC MATERIALS INTO THE ATMOSPHERE IS REDUCED BY AT LEAST 85 PERCENT BY WEIGHT.

FILE COPY

This initial permit must be renewed by 5-18-78 or an earlier date if equipment is moved, altered, or changes ownership. If billing for annual renewal fee (Rule 301.f) not received by expiration date, contact Zone office above.

This permit does not authorize the emission of air contaminants in excess of those allowed by Division 26 of the Health and Safety Code of the State of California or the Rules of the Air Quality Management District. This permit cannot be considered as permission to violate existing laws, ordinances, regulations or statutes of other government agencies.

087822 $25.00

VOID UNLESS VALIDATED

AIR POLLUTION CONTROL OFFICER

BY Joseph Iramma

DATE 5-18-77

78P235s- 2/77

Exhibit 546

1977 Permit to Operate
Four Stripper Tanks (2 of 4)

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

PERMIT to OPERATE

S 00095

SOUTHERN ZONE - 1610 E. Ball Road, Anaheim, California 92805

Operation under this permit must be conducted in compliance with all information included with the initial application and the initial permit conditions. The equipment must be properly maintained and kept in good operating condition at all times. In accordance with Rule 206, this Permit to Operate or copy must be posted on or within 8 meters of equipment.

LEGAL OWNER OR OPERATOR: ARNOLD ENGINEERING COMPANY

00304A

EQUIPMENT LOCATED AT: 1551 EAST ORANGETHORPE AVENUE, FULLERTON, CALIFORNIA 92634

EQUIPMENT DESCRIPTION AND CONDITIONS:

STRIPPER TANK, NICKEL PLATES, VAPOR TYPE, 1'-9" W. X 2'-1" L. X 2'-9" H., 3 KVA ELECTRICALLY HEATED, PD 428.

CONDITIONS:

1. PHOTOCHEMICALLY REACTIVE SOLVENT MUST NOT BE USED IN THIS EQUIPMENT, UNLESS THE EMISSION OF ORGANIC MATERIALS INTO THE ATMOSPHERE IS REDUCED BY AT LEAST 85 PERCENT BY WEIGHT.

FILE COPY

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087822 $25.00

VOID UNLESS VALIDATED

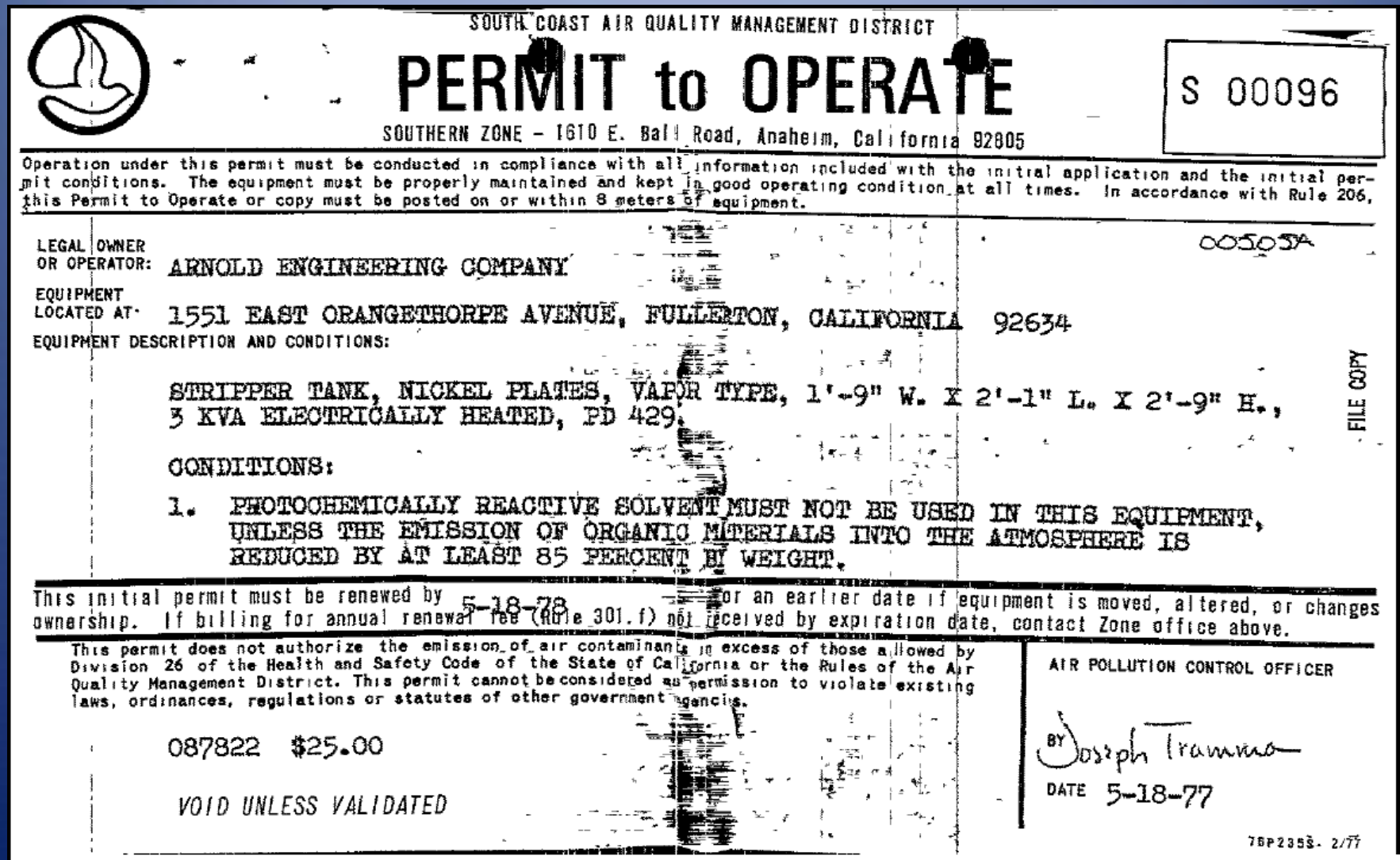
AIR POLLUTION CONTROL OFFICER

BY Joseph Tramma

DATE 5-18-77

Exhibit 547

1977 Permit to Operate
Four Stripper Tanks (3 of 4)



SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

PERMIT to OPERATE

SOUTHERN ZONE – 1610 E. Ball Road, Anaheim, California 92805

S 00096

Operation under this permit must be conducted in compliance with all information included with the initial application and the initial permit conditions. The equipment must be properly maintained and kept in good operating condition at all times. In accordance with Rule 206, this Permit to Operate or copy must be posted on or within 8 meters of equipment.

005053A

LEGAL OWNER OR OPERATOR: ARNOLD ENGINEERING COMPANY

EQUIPMENT LOCATED AT: 1551 EAST ORANGETHORPE AVENUE, FULLERTON, CALIFORNIA 92634

EQUIPMENT DESCRIPTION AND CONDITIONS:

STRIPPER TANK, NICKEL PLATES, VAPOR TYPE, 1'-9" W. X 2'-1" L. X 2'-9" H., 3 KVA ELECTRICALLY HEATED, PD 429.

CONDITIONS:

1. PHOTOCHEMICALLY REACTIVE SOLVENT MUST NOT BE USED IN THIS EQUIPMENT, UNLESS THE EMISSION OF ORGANIC MATERIALS INTO THE ATMOSPHERE IS REDUCED BY AT LEAST 85 PERCENT BY WEIGHT.

FILE COPY

This initial permit must be renewed by 5-18-78 or an earlier date if equipment is moved, altered, or changes ownership. If billing for annual renewal fee (Rule 301.f) not received by expiration date, contact Zone office above.

This permit does not authorize the emission of air contaminants in excess of those allowed by Division 26 of the Health and Safety Code of the State of California or the Rules of the Air Quality Management District. This permit cannot be considered as permission to violate existing laws, ordinances, regulations or statutes of other government agencies.

087822 $25.00

VOID UNLESS VALIDATED

AIR POLLUTION CONTROL OFFICER

BY Joseph Tramma

DATE 5-18-77

76P235S. 2/77

Exhibit 544

1977 Permit to Operate
Four Stripper Tanks (4 of 4)

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

PERMIT to OPERATE

SOUTHERN ZONE – 1610 E. Ball Road, Anaheim, California 92805

S 00097

Operation under this permit must be conducted in compliance with all information included with the initial application and the initial permit conditions. The equipment must be properly maintained and kept in good operating condition at all times. In accordance with Rule 206, this Permit to Operate or copy must be posted on or within 8 meters of equipment.

005DGA

LEGAL OWNER OR OPERATOR: ARNOLD ENGINEERING COMPANY

EQUIPMENT LOCATED AT: 1551 EAST ORANGETHORPE AVENUE, FULLERTON, CALIFORNIA 92634

EQUIPMENT DESCRIPTION AND CONDITIONS:

STRIPPER TANK, NICKEL PLATES, VAPOR TYPE, 1'-9" W. X 2'-1" L. X 2'-9" H., 3 KVA ELECTRICALLY HEATED, PD 277A.

CONDITIONS:

1. PHOTOCHEMICALLY REACTIVE SOLVENT MUST NOT BE USED IN THIS EQUIPMENT, UNLESS THE EMISSION OF ORGANIC MATERIALS INTO THE ATMOSPHERE IS REDUCED BY AT LEAST 85 PERCENT BY WEIGHT.

FILE COPY

This initial permit must be renewed by 5-18-78 or an earlier date if equipment is moved, altered, or changes ownership. If billing for annual renewal fee (Rule 301.f) not received by expiration date, contact Zone office above.

This permit does not authorize the emission of air contaminants in excess of those allowed by Division 26 of the Health and Safety Code of the State of California or the Rules of the Air Quality Management District. This permit cannot be considered as permission to violate existing laws, ordinances, regulations or statutes of other government agencies.

087822 $25.00

VOID UNLESS VALIDATED

AIR POLLUTION CONTROL OFFICER

BY Joseph Tramma

DATE 5-18-77

Exhibit 549

1977 Permit for 1,1,1-TCA Storage Tank

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

PERMIT to OPERATE

SOUTHERN ZONE - 1810 E. Ball Road, Anaheim, California 92805

S 00094

Operation under this permit must be conducted in compliance with all information included with the initial application and the initial permit conditions. The equipment must be properly maintained and kept in good operating condition at all times. In accordance with Rule 206, this Permit to Operate or copy must be posted on or within 8 meters of equipment.

005034

LEGAL OWNER OR OPERATOR. ARNOLD ENGINEERING COMPANY

EQUIPMENT LOCATED AT: 1551 EAST ORANGETHORPE AVENUE, FULLERTON, CALIFORNIA 92634

EQUIPMENT DESCRIPTION AND CONDITIONS:

STORAGE TANK, 1, 1, 1 TRICHLOROETHANE, KEESEE, ABOVE GROUND, 550 GAL., 3'-10" DIA. X 6'-9" H.

FILE COPY

This initial permit must be renewed by 5-18-78 or an earlier date if equipment is moved, altered, or changes ownership. If billing for annual renewal fee (Rule 301.f) not received by expiration date, contact Zone office above.

This permit does not authorize the emission of air contaminants in excess of those allowed by Division 26 of the Health and Safety Code of the State of California or the Rules of the Air Quality Management District. This permit cannot be considered as permission to violate existing laws, ordinances, regulations or statutes of other government agencies.

087822 $25.00

VOID UNLESS VALIDATED

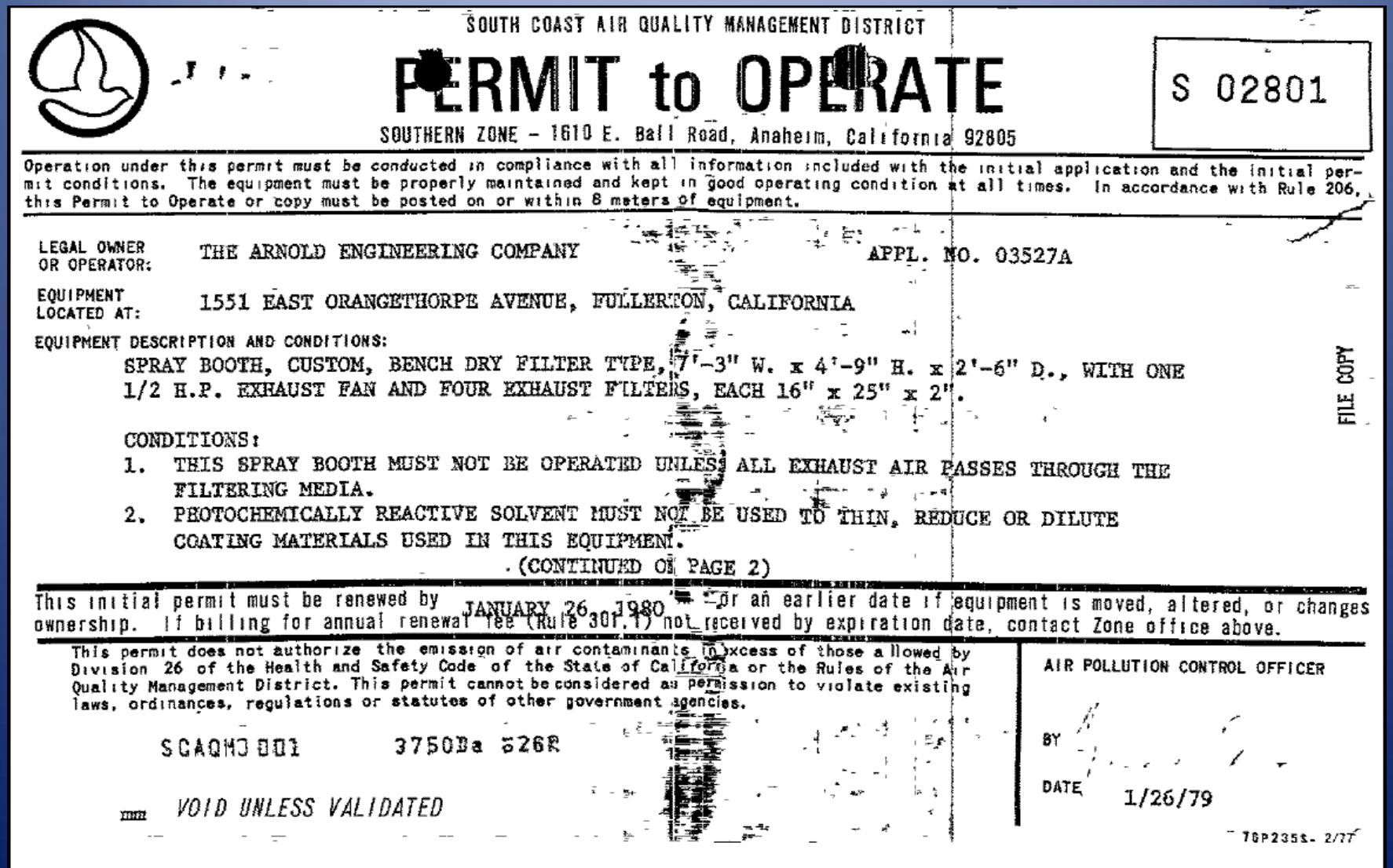
AIR POLLUTION CONTROL OFFICER

BY Joseph Tramma

DATE 5-18-77

T6P235S- 2/77

1979 Permit to Operate a Spray Booth



SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

PERMIT to OPERATE

SOUTHERN ZONE – 1610 E. Ball Road, Anaheim, California 92805

S 02801

Operation under this permit must be conducted in compliance with all information included with the initial application and the initial permit conditions. The equipment must be properly maintained and kept in good operating condition at all times. In accordance with Rule 206, this Permit to Operate or copy must be posted on or within 8 meters of equipment.

LEGAL OWNER OR OPERATOR: THE ARNOLD ENGINEERING COMPANY APPL. NO. 03527A

EQUIPMENT LOCATED AT: 1551 EAST ORANGETHORPE AVENUE, FULLERTON, CALIFORNIA

EQUIPMENT DESCRIPTION AND CONDITIONS:

SPRAY BOOTH, CUSTOM, BENCH DRY FILTER TYPE, 7'-3" W. x 4'-9" H. x 2'-6" D., WITH ONE 1/2 H.P. EXHAUST FAN AND FOUR EXHAUST FILTERS, EACH 16" x 25" x 2".

FILE COPY

CONDITIONS:

1. THIS SPRAY BOOTH MUST NOT BE OPERATED UNLESS ALL EXHAUST AIR PASSES THROUGH THE FILTERING MEDIA.
2. PHOTOCHEMICALLY REACTIVE SOLVENT MUST NOT BE USED TO THIN, REDUCE OR DILUTE COATING MATERIALS USED IN THIS EQUIPMENT.

(CONTINUED ON PAGE 2)

This initial permit must be renewed by JANUARY 26, 1980 or an earlier date if equipment is moved, altered, or changes ownership. If billing for annual renewal fee (Rule 301.1) not received by expiration date, contact Zone office above.

This permit does not authorize the emission of air contaminants in excess of those allowed by Division 26 of the Health and Safety Code of the State of California or the Rules of the Air Quality Management District. This permit cannot be considered as permission to violate existing laws, ordinances, regulations or statutes of other government agencies.

SCAQMD 001 3750Ba 026R

VOID UNLESS VALIDATED

AIR POLLUTION CONTROL OFFICER

BY

DATE 1/26/79

76P235s. 2/77

Arnold Solvent Usage – Waste Disposal

- No wastewater treatment system for VOCs was reported to exist
- Wastewater treatment system consisted of
  - neutralization tank for acid neutralization of process water
  - clarifiers for removal of suspended solids and floating materials

Arnold Solvent Usage – Waste Disposal

- Neutralization tank received process water from:
  - Cleaning area (caustics, unidentified solvents)
  - Etching (ferric chloride)
  - Stripping (PCE)
- Wastewater stream discharged to city sewer system

2009 Declaration of Donalee Farmer

- Worked at the site for Ensign and Arnold from 1956 to 1986
- Duties included environmental compliance, including handling, replacement, and disposal of chemicals used by Arnold
- Arnold initially installed one solvent degreaser, two more added around 1976 as part of chemical milling operation

Exhibit 745

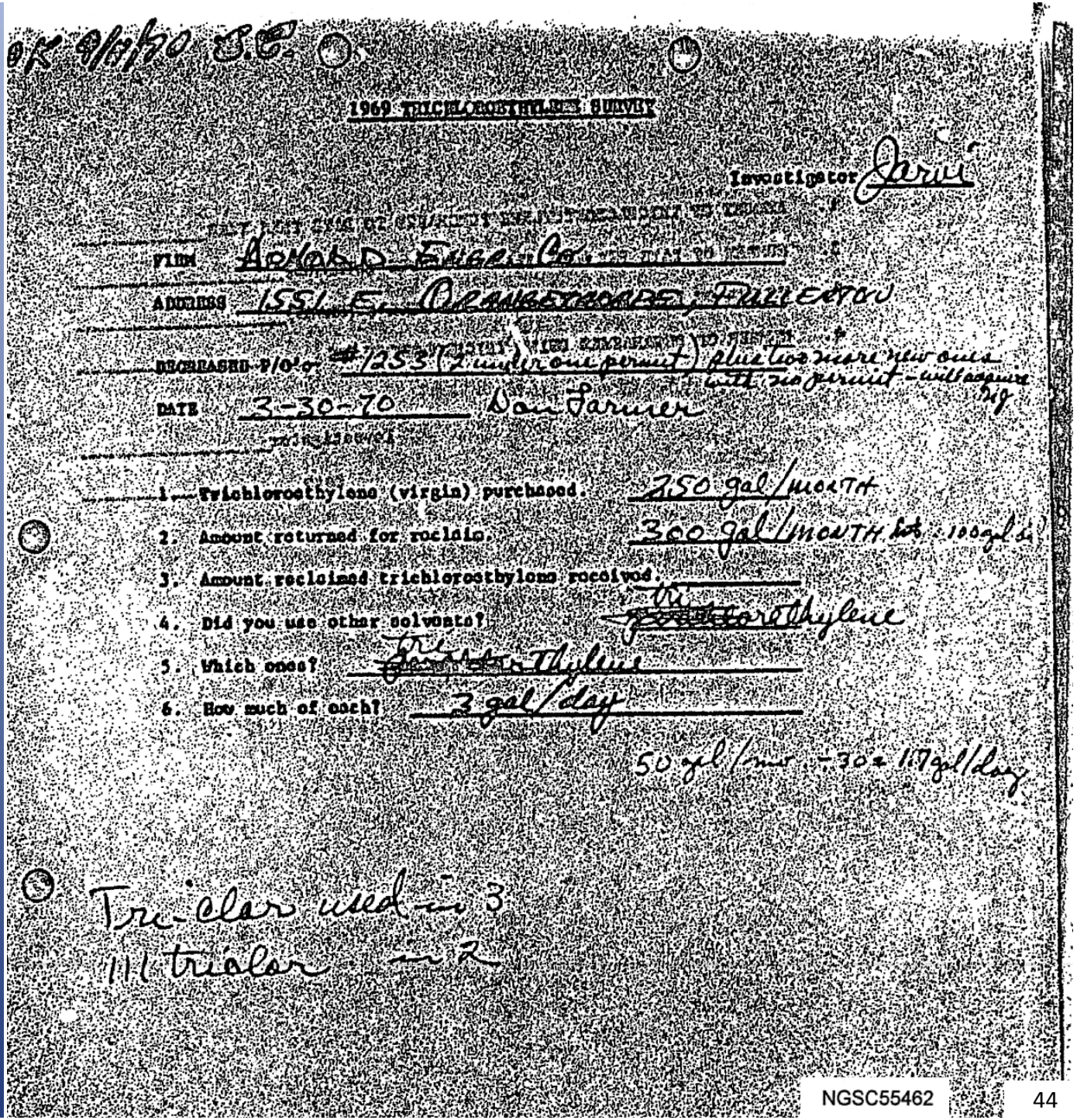
2009 Declaration of Donalee Farmer

- "Over the 25 years I worked at Arnold, only one solvent was used in the degreasers. That solvent was 1,1,1-trichloroehane ("1,1,1-TCA"). Arnold never used perchloroethylene ("PCE") or trichlorotheylene ("TCE") in any aspect of its operations at 1551 East Orangethorpe to my knowledge."

Exhibit 745

1969 TCE Survey (dated 3/30/70) noting purchase of 250 gal/mo. virgin TCE and return of 300 gal/mo. used TCE; signed by Don Farmer.

Also notes TCE used in 3 degreasers and 1,1,1-TCA used in 2 degreasers.



OK 9/8/70 S.C.

1969 TRICHLOROETHYLENE SURVEY

Investigator Jarvis

FIRM Arnold D. Engle Co.

ADDRESS 1551 E. Broadway, Tucson

DISCHARGE P/O's #1253 (1 under one permit) plus two more new ones with no permit - will acquire P/O

DATE 3-30-70 Don Farmer

1. Trichloroethylene (virgin) purchased. 250 gal/month
2. Amount returned for reclaim. 300 gal/month (est. 100 gal)
3. Amount reclaimed trichloroethylene received. —
4. Did you use other solvents? Tri-
5. Which ones? Perchloroethylene
6. How much of each? 3 gal/day

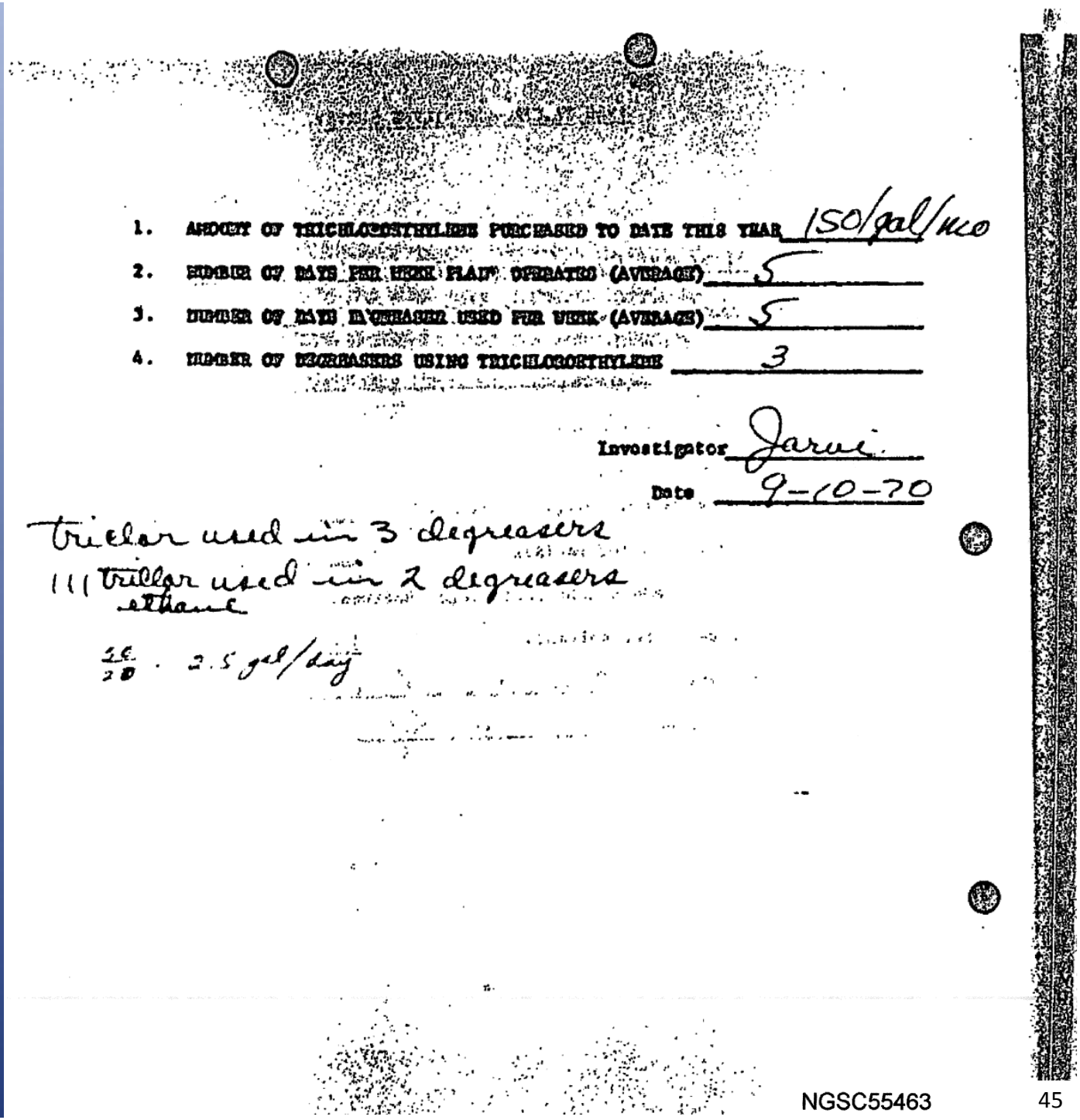
50 gal/mo ÷ 30 = 1.7 gal/day

Tri-clor used in 3
1.1.1 trichlor in 2

Exhibit 745

1970 TCE Survey (dated 9/10/70) noting purchase of 150 gal/mo. of TCE.

Also notes TCE used in 3 degreasers and 1,1,1-TCA used in 2 degreasers.



1. AMOUNT OF TRICHLOROETHYLENE PURCHASED TO DATE THIS YEAR 150/gal/mo
2. NUMBER OF DAYS PER WEEK PLANT OPERATED (AVERAGE) 5
3. NUMBER OF DAYS DEGREASER USED PER WEEK (AVERAGE) 5
4. NUMBER OF DEGREASERS USING TRICHLOROETHYLENE 3

Investigator Jarvi

Date 9-10-70

Trielor used in 3 degreasers

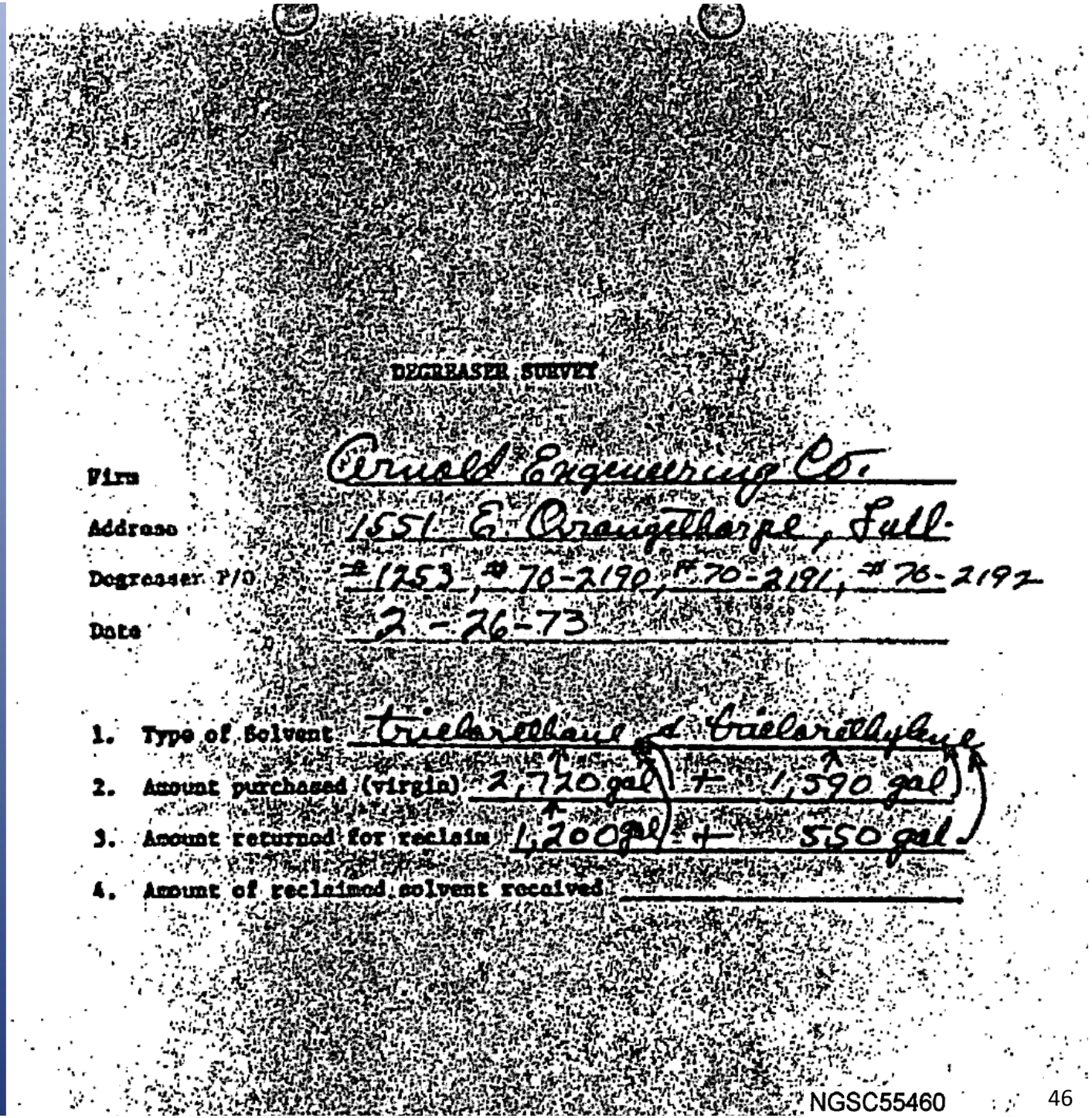
111 Trillar used in 2 degreasers
ethane

$\frac{50}{20}$ · 2.5 gal/day

NGSC55463

Exhibit 745

1973 Degreaser Summary noting purchase of new TCE and 1,1,1-TCA and return of used TCE and 1,1,1-TCA



DEGREASER SURVEY

Firm: Arnold Engineering Co.

Address: 1551 E. Orangethorpe, Full-

Degreaser P/O: #1253, #70-2190, #70-2191, #70-2192

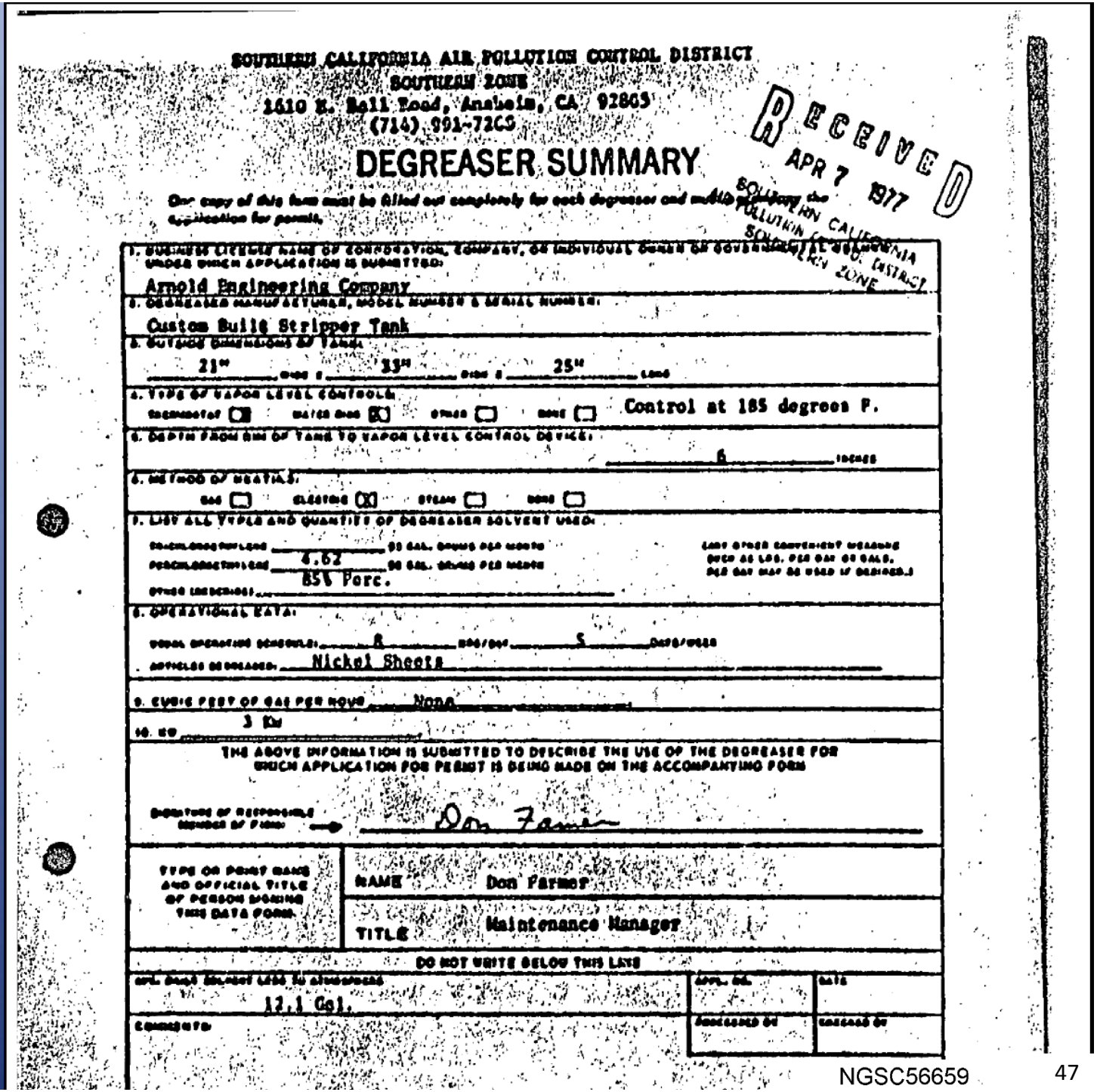
Date: 2-26-73

1. Type of Solvent: trichloroethane & trichloroethylene
2. Amount purchased (virgin): 2,720 gal + 1,590 gal
3. Amount returned for reclaim: 4,200 gal + 550 gal
4. Amount of reclaimed solvent received:

NGSC55460

Exhibit 746

1977 Degreaser Summary noting PCE use in custom built stripper tank; signed by Don Farmer



SOUTHERN CALIFORNIA AIR POLLUTION CONTROL DISTRICT
SOUTHERN ZONE
1610 E. Ball Road, Anaheim, CA 92805
(714) 991-7205

DEGREASER SUMMARY

RECEIVED APR 7 1977 SOUTHERN CALIFORNIA AIR POLLUTION CONTROL DIST. SOUTHERN ZONE

One copy of this form must be filled out completely for each degreaser and must accompany the application for permit.

1. BUSINESS LICENSE NAME OF CORPORATION, COMPANY, OR INDIVIDUAL OWNER OR GOVERNMENTAL AGENCY UNDER WHICH APPLICATION IS SUBMITTED: Arnold Engineering Company

2. DEGREASER MANUFACTURER, MODEL NUMBER & SERIAL NUMBER: Custom Built Stripper Tank

3. OUTSIDE DIMENSIONS OF TANK: 21" WIDE x 33" HIGH x 25" LONG

4. TYPE OF VAPOR LEVEL CONTROLS: THERMOSTAT ☐ WATER JACKET ☒ OTHER ☐ NONE ☐ Control at 185 degrees F.

5. DEPTH FROM RIM OF TANK TO VAPOR LEVEL CONTROL DEVICE: 6 INCHES

6. METHOD OF HEATING: GAS ☐ ELECTRIC ☒ STEAM ☐ NONE ☐

7. LIST ALL TYPES AND QUANTITIES OF DEGREASER SOLVENT USED:
PERCHLOROETHYLENE _____ GAL. GRADE PER MONTH
PERCHLOROETHYLENE 4.62 GAL. GRADE PER MONTH 85% Perc.
OTHER (SPECIFY): _____
(ANY OTHER CONVENIENT MEASURE SUCH AS LBS. PER DAY OR GALS. PER DAY MAY BE USED IF DESIRED.)

8. OPERATIONAL DATA:
NORMAL OPERATING SCHEDULE: 8 HRS/DAY 5 DAYS/WEEK
ARTICLES DEGREASED: Nickel Sheets

9. CUBIC FEET OF GAS PER HOUR: None

10. ETC: 3 Kw

THE ABOVE INFORMATION IS SUBMITTED TO DESCRIBE THE USE OF THE DEGREASER FOR WHICH APPLICATION FOR PERMIT IS BEING MADE ON THE ACCOMPANYING FORM

SIGNATURE OF RESPONSIBLE MEMBER OF FIRM: Don Farmer

TYPE OR PRINT NAME AND OFFICIAL TITLE OF PERSON SIGNING THIS DATA FORM

NAME Don Farmer

TITLE Maintenance Manager

DO NOT WRITE BELOW THIS LINE

APPL. RULE SOLVENT LESS 15 LBS/DAY/GAL 12.1 Gal.

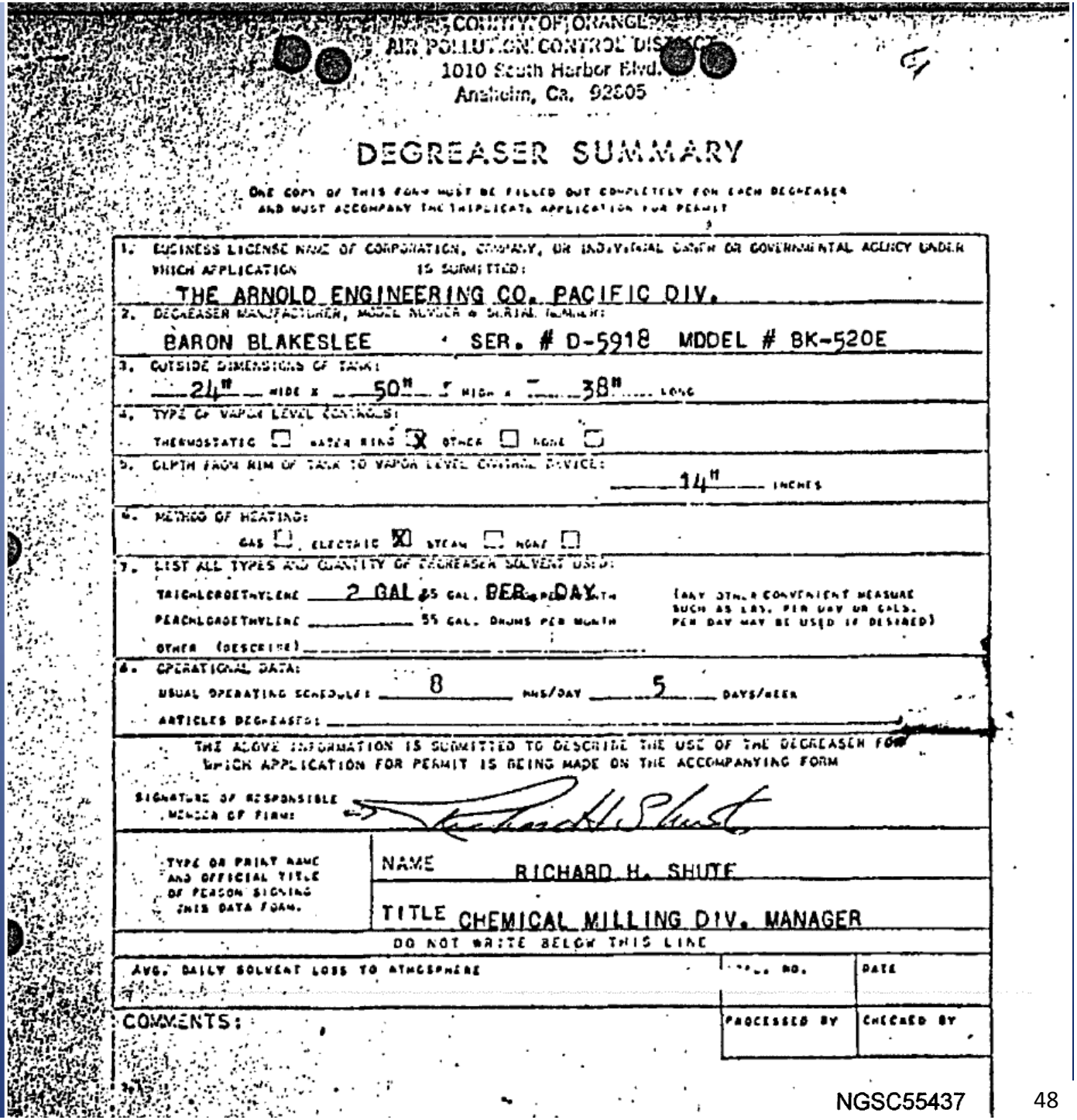
APPL. NO. _____ DATE _____

COMMENTS: _____

PROCESSED BY _____ CHECKED BY _____

NGSC56659

Degreaser Summary (undated, prior to 1976) noting TCE use in Baron Blakeslee degreaser



COUNTY OF ORANGE
AIR POLLUTION CONTROL DISTRICT
1010 South Harbor Blvd.
Anaheim, Ca. 92805

DEGREASER SUMMARY

ONE COPY OF THIS FORM MUST BE FILLED OUT COMPLETELY FOR EACH DEGREASER AND MUST ACCOMPANY THE TRIPLICATE APPLICATION FOR PERMIT

1. BUSINESS LICENSE NAME OF CORPORATION, COMPANY, OR INDIVIDUAL OWNER OR GOVERNMENTAL AGENCY UNDER WHICH APPLICATION IS SUBMITTED:
THE ARNOLD ENGINEERING CO. PACIFIC DIV.

2. DEGREASER MANUFACTURER, MODEL NUMBER & SERIAL NUMBER:
BARON BLAKESLEE · SER. # D-5918 MODEL # BK-520E

3. OUTSIDE DIMENSIONS OF TANK:
24" WIDE x 50" HIGH x 38" LONG

4. TYPE OF VAPOR LEVEL CONTROL:
THERMOSTATIC ☐ WATER RING ☒ OTHER ☐ NONE ☐

5. DEPTH FROM RIM OF TANK TO VAPOR LEVEL CONTROL DEVICE:
14" INCHES

6. METHOD OF HEATING:
GAS ☐ ELECTRIC ☒ STEAM ☐ NONE ☐

7. LIST ALL TYPES AND QUANTITY OF DEGREASER SOLVENT USED:
TRICHLOROETHYLENE 2 GAL 55 GAL. DRUMS PER MONTH
PERCHLOROETHYLENE _____ 55 GAL. DRUMS PER MONTH
OTHER (DESCRIBE) _____
(ANY OTHER CONVENIENT MEASURE SUCH AS LBS. PER DAY OR GALS. PER DAY MAY BE USED IF DESIRED)

8. OPERATIONAL DATA:
USUAL OPERATING SCHEDULE: 8 HRS/DAY 5 DAYS/WEEK
ARTICLES DEGREASED: _____

THE ABOVE INFORMATION IS SUBMITTED TO DESCRIBE THE USE OF THE DEGREASER FOR WHICH APPLICATION FOR PERMIT IS BEING MADE ON THE ACCOMPANYING FORM

SIGNATURE OF RESPONSIBLE MEMBER OF FIRM: Richard H. Shute

TYPE OR PRINT NAME AND OFFICIAL TITLE OF PERSON SIGNING THIS DATA FORM.
NAME RICHARD H. SHUTE
TITLE CHEMICAL MILLING DIV. MANAGER

DO NOT WRITE BELOW THIS LINE

AVG. DAILY SOLVENT LOSS TO ATMOSPHERE | PERMIT NO. | DATE
COMMENTS: | PROCESSED BY | CHECKED BY

NGSC55437

2009 Declaration of Donalee Farmer

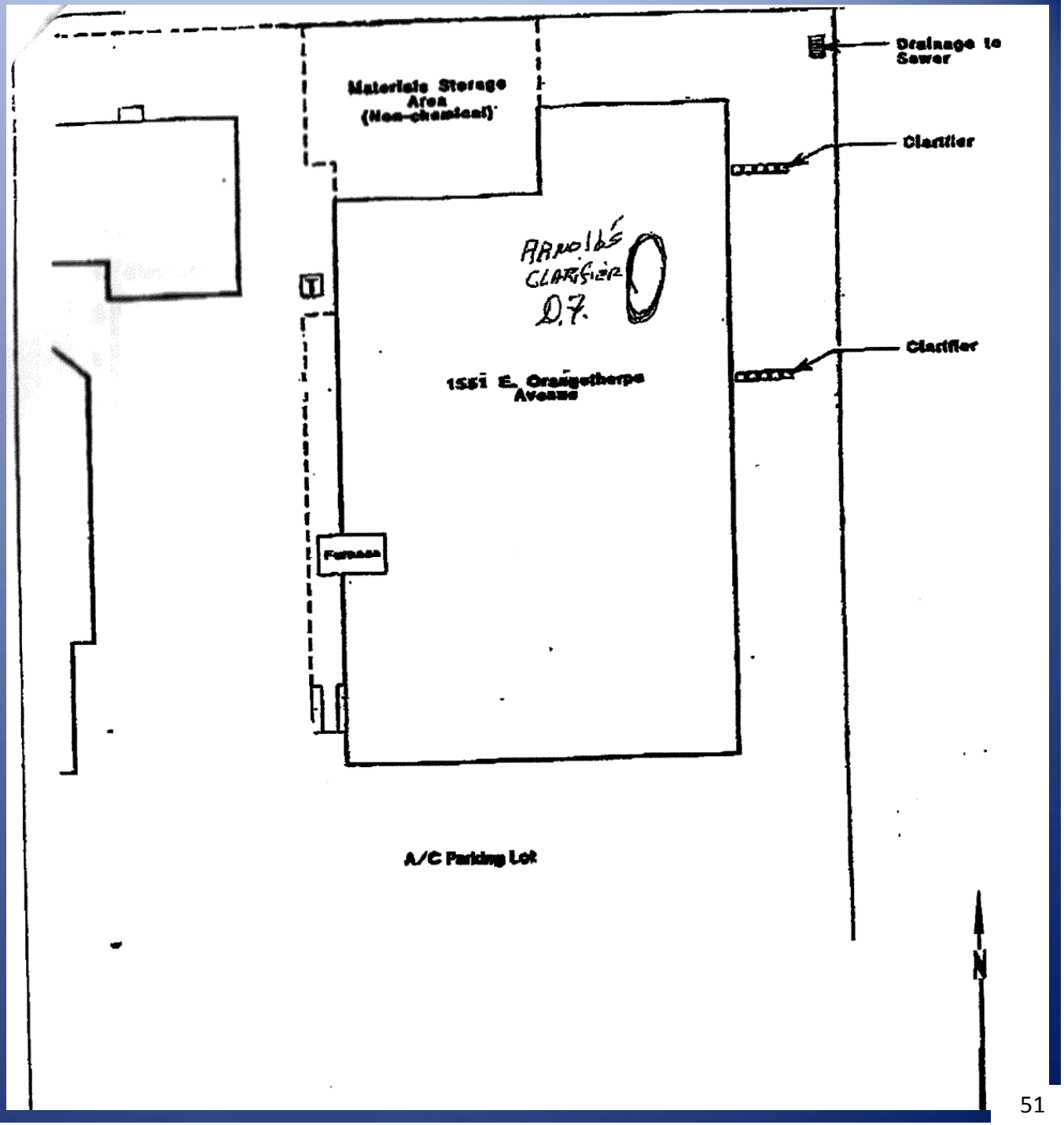
- New 1,1,1-TCA was delivered in 55-gallon drums and stored inside next to degreaser
- Used 1,1,1-TCA was pumped directly out of degreasers to a pump truck to be hauled away
- On some occasions, used 1,1,1-TCA was pumped into drums that were stored inside next to the degreasers

Exhibit 572

2009 Declaration of Donalee Farmer

- "Arnold used only this one clarifier. The map attached as Exhibit "D" appears to show to clarifiers located outside the Arnold plant. However, I do no recall a clarifier at these locations or anywhere outside the plant at any time during Arnold's occupation."

Exhibit “D” showing Donalee Farmer’s depiction of the single clarifier location



1988 BCL Assoc. Environmental Site Assessment

- Donalee Farmer attended the 1986 BCL Assoc. site inspection
- Five industrial wastewater clarifiers were observed during site inspection:
  - Two outside the building on the east side
  - One in the etch room
  - One in the drag-out room
  - One near the center of the building

Eye Encounter

- Occupied the site from 1989 to 1992
- Parent company of Woodmill Products
- SCAQMD permits did not indicate use of chlorinated solvents

Woodmill Products

- Occupied the site from 1990 to at least 1992
- Manufactured picture frames and performed silk screening operations
- 1990 City of Fullerton Fire Department hazardous materials inventory did not contain chlorinated solvents

Woodmill Products

- 1996 Phase I ESA indicated use of paint, wood finish, thinners, and solvents

Marion Mfg., Inc.

- Occupied the site in 1992
- No information available regarding operations or chemical usage

Princess Frames

- Occupied the site from 1992 to 1993
- May have been associated with Woodmill Products
- No information available regarding operations or chemical usage

Elden Collections/Country Affaire

- Occupied the site since 1995
- Manufactures wooden furniture; the process includes staining, sealing, and coating with lacquer; coatings applied in spray booth
- Operates under SCAQMD permits prohibiting the use of carcinogenic air contaminants, including PCE, TCE, and 1,1,1-TCA

Elden Collections/Country Affaire

- A 1996 Phase I ESA Update reported that up to 20% of the space was leased by Johnson Controls to store battery casings
- The 1996 Phase I ESA Update did not identify storage or use of chlorinated solvents on the property

Elden Collections/Country Affaire

- 2001 City of Fullerton Fire Department hazardous materials inventory did not contain chlorinated solvents
- Numerous complaints of solvent, paint, lacquer, paint thinner, and urethane odors filed from 1996 to 2005; inspections did not mention presence of or use of chlorinated solvents

Adjacent Properties

- 1550 E. Kimberly - Johnson Controls
  - No indication of COC use except for maintenance of equipment
  - PCE, TCE, 1,1,1-TCA, and 1,1-DCE present in soil along southern property boundary
  - PCE, TCE, and 1,1-DCE present in soil gas samples along southern property boundary
  - TCE and 1,1-DCE detected in groundwater
  - No evidence of significant solvent use, but performed soil remediation under RWQCB orders

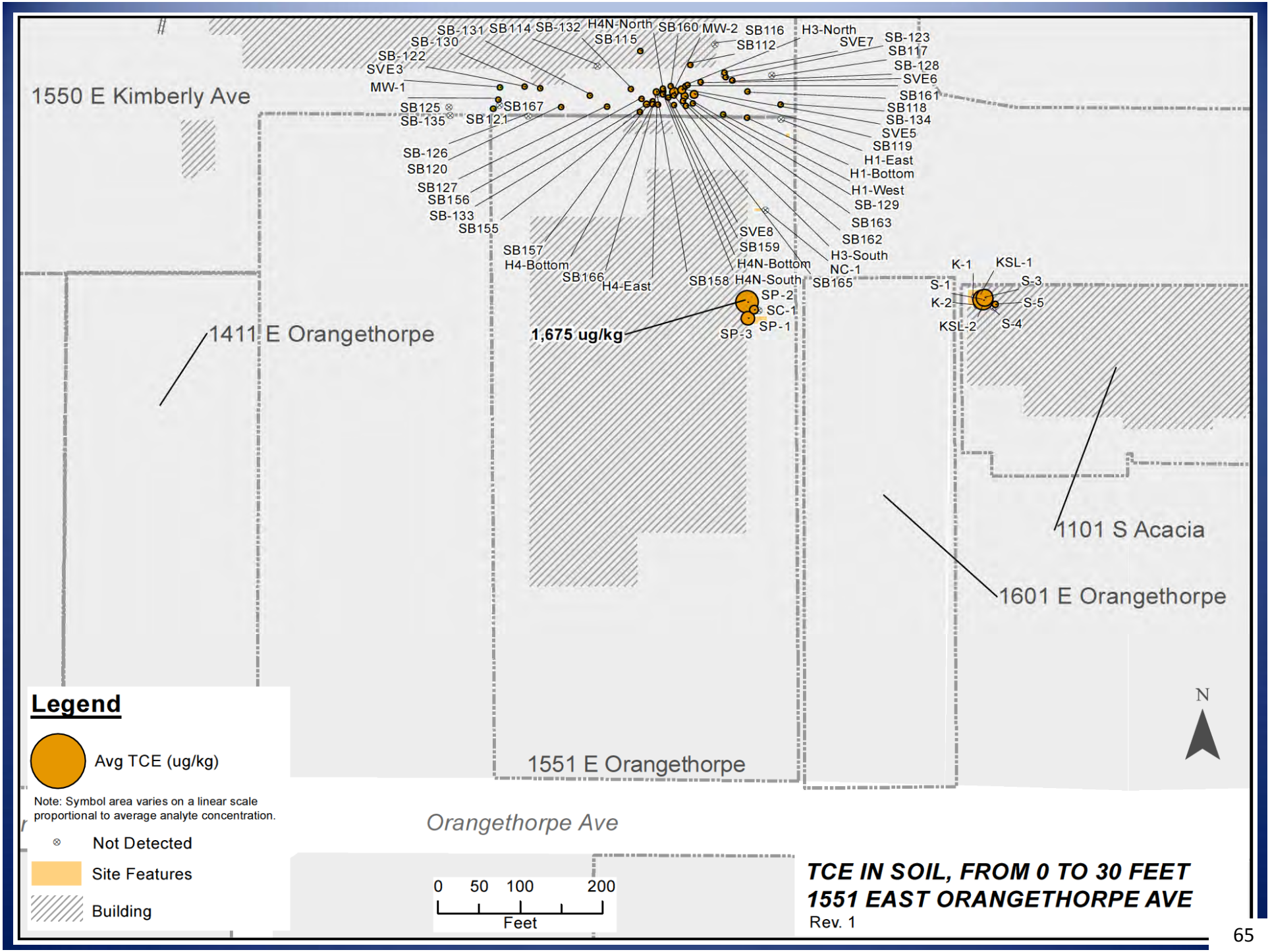
Adjacent Properties

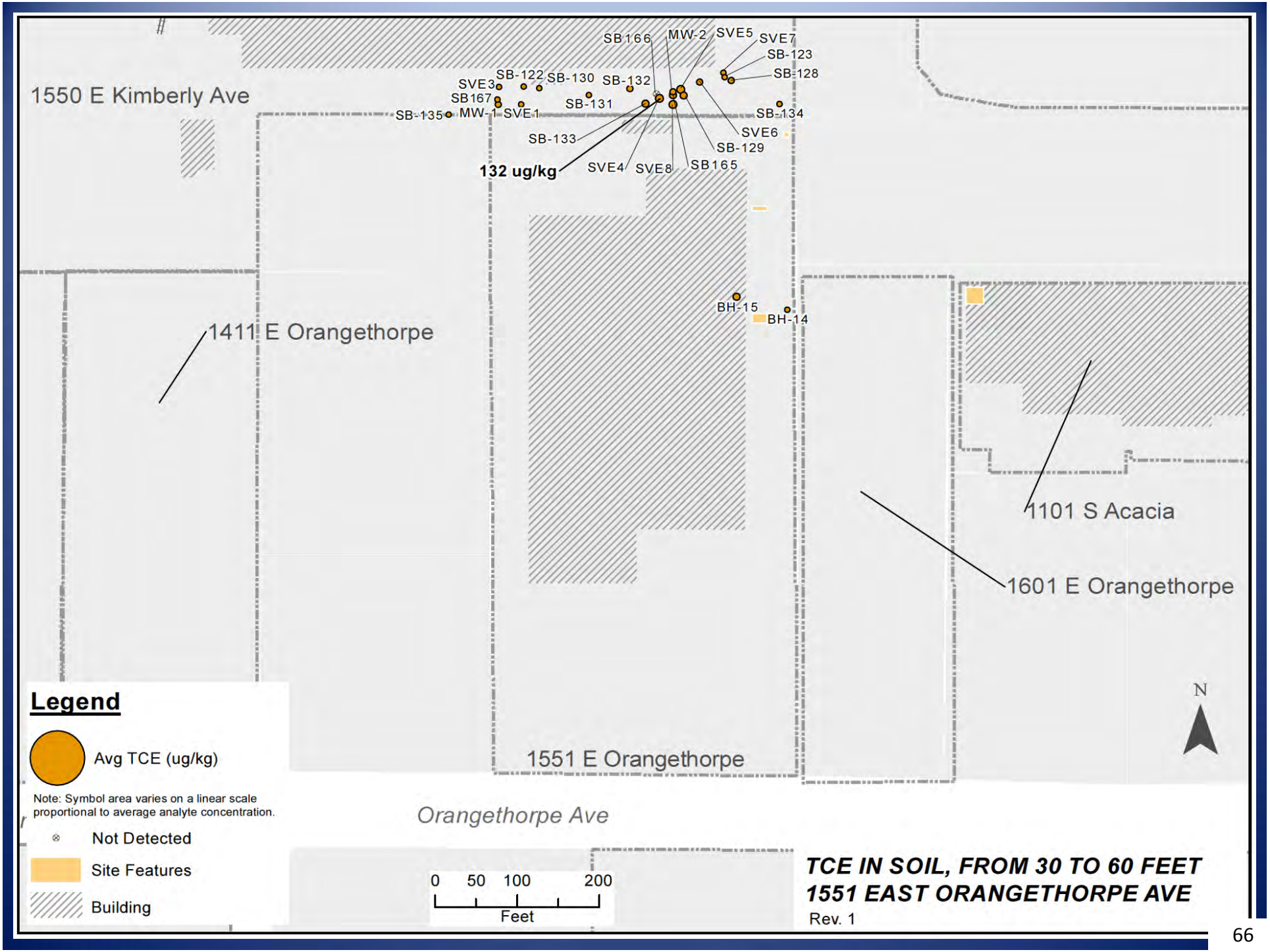
- 1101 S. Acacia – Jonathan Manufacturing
  - 1966 to at least 2002 - Manufactured motors, drives, and rotating equipment for electronics
  - Used small aerosol cans containing PCE and 1,1,1-TCA
  - 1989 – PCE (up to 1,200 ppb) and TCE (up to 1,300 ppb) found in soils near UST
  - From 1993 to 1998, did not report PCE disposal, but from 1999 to 2001 reported disposal ranging from 9.1 tons to 12.6 tons

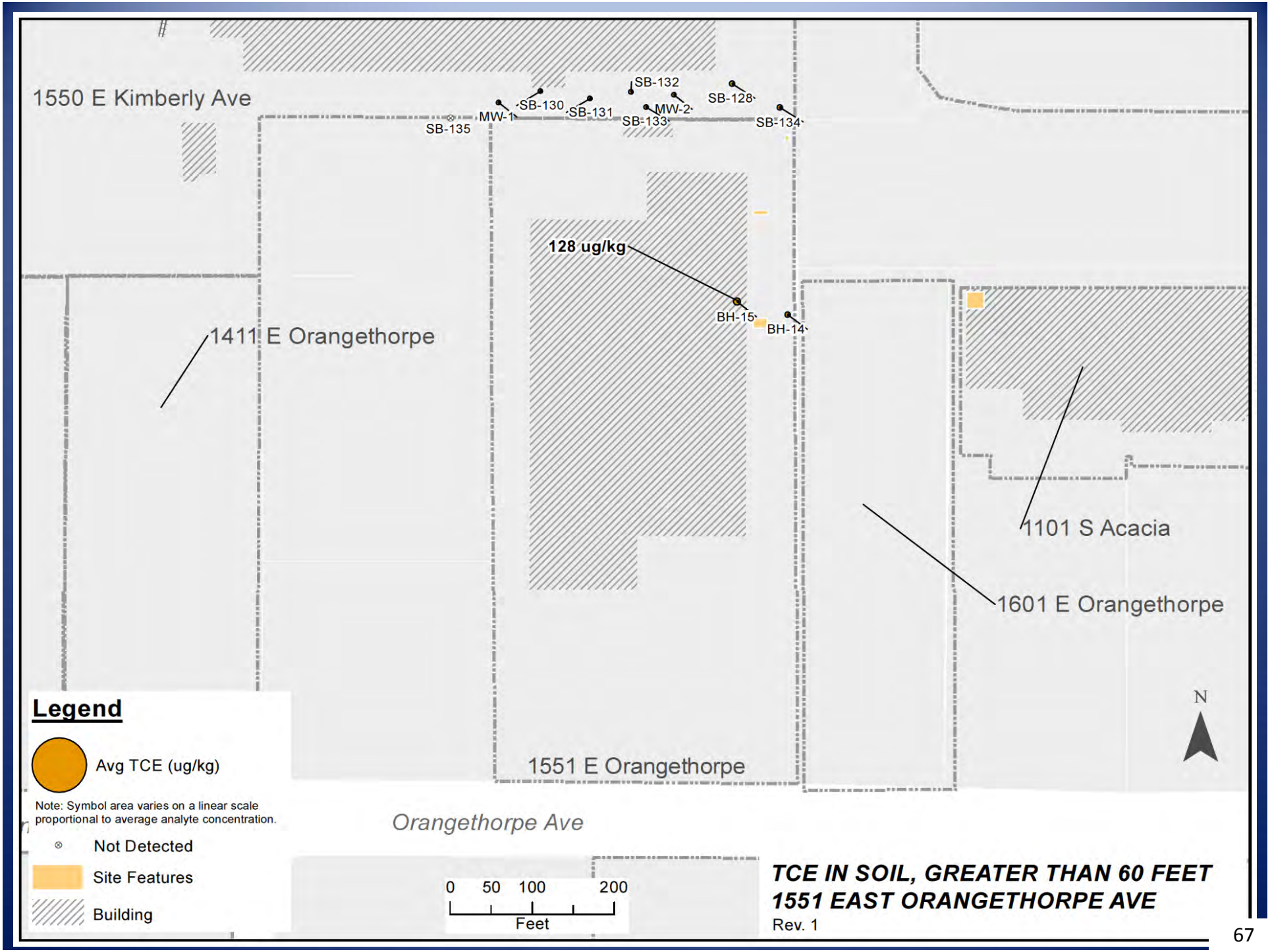
Adjacent Properties

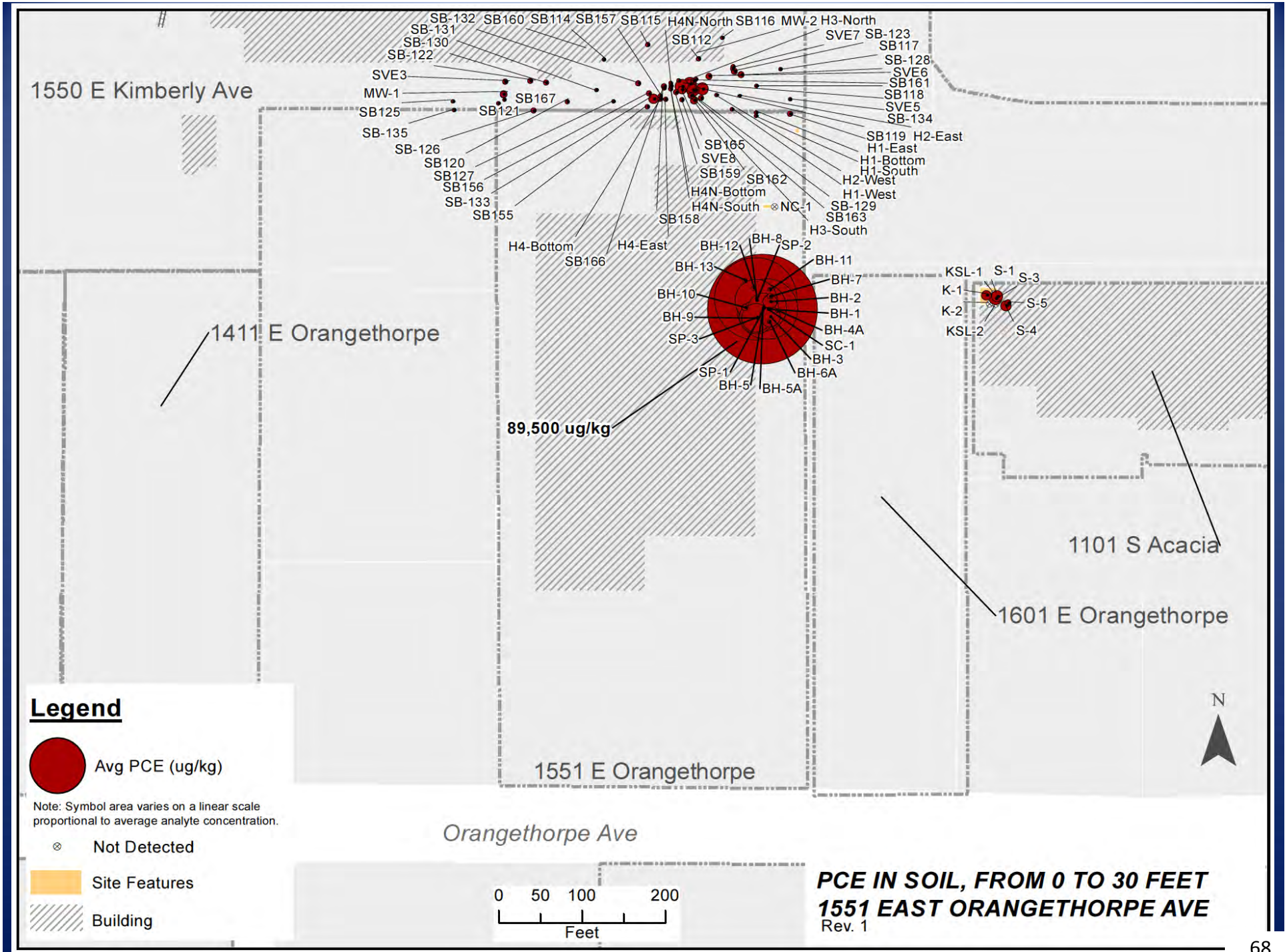
- 1601 E. Orangethorpe
  - 1968 (?) to 1971 – CAW Metal Fabricators – 55-gallons of "solvent" (FFD in 1968)
  - 1973 to 1977 – Everest Electronics – TCE degreaser (FFD in 1973)
  - 1978 to at least 1983 – Sundstrand Aviation
    - 1973 to 1983 – Small PCE degreaser
    - 1983 to ? – Small 1,1,1-TCA degreaser
  - No environmental data are available

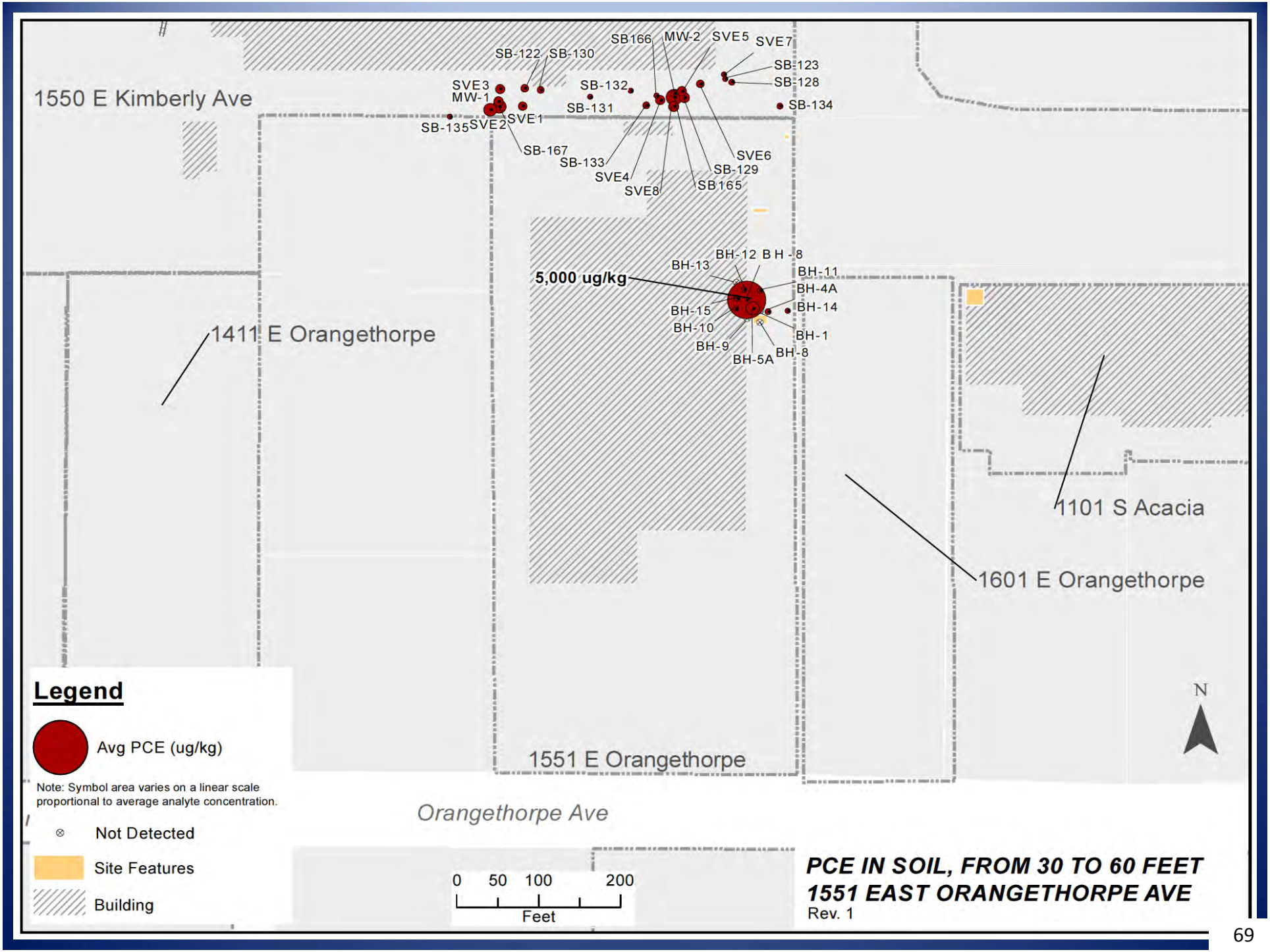
Soils

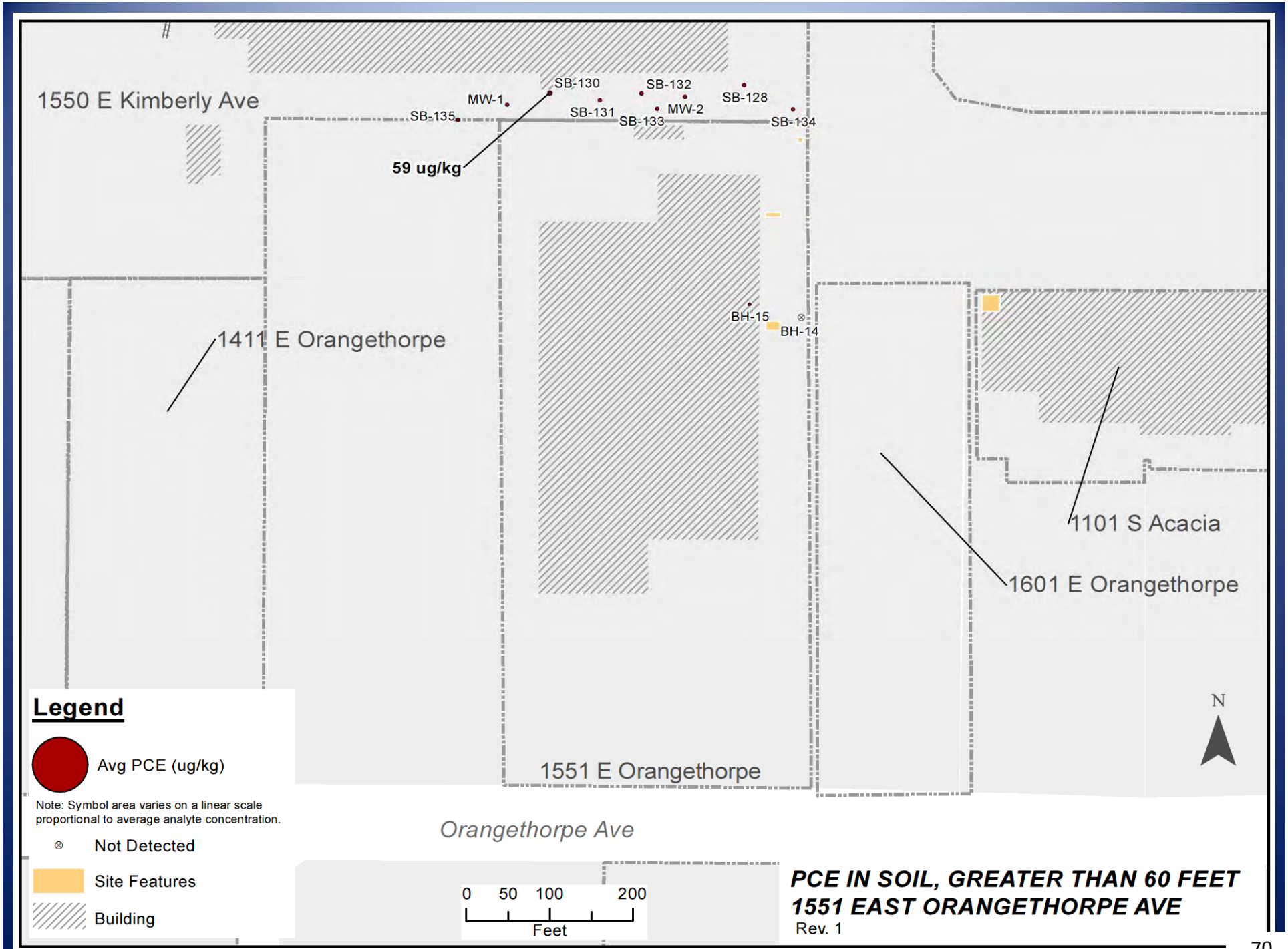

1550 E Kimberly Ave
1411 E Orangethorpe
1551 E Orangethorpe
1601 E Orangethorpe
1101 S Acacia
Orangethorpe Ave
1,675 ug/kg
SB-131
SB114
SB-132
H4N-North
SB160
MW-2
SB116
H3-North
SB-130
SB115
SB112
SVE7
SB-123
SB-122
SB117
SVE3
SB-128
MW-1
SVE6
SB161
SB125
SB167
SB118
SB-135
SB121
SB-134
SVE5
SB-126
SB119
SB120
H1-East
SB127
H1-Bottom
SB156
H1-West
SB-133
SB-129
SB155
SB163
SVE8
SB162
SB157
SB159
H3-South
H4-Bottom
H4N-Bottom
NC-1
SB166
H4-East
SB158
H4N-South
SB165
SP-2
SC-1
SP-3
SP-1
K-1
KSL-1
S-1
S-3
K-2
S-5
KSL-2
S-4
N
Legend
Avg TCE (ug/kg)
Note: Symbol area varies on a linear scale proportional to average analyte concentration.
Not Detected
Site Features
Building
0
50
100
200
Feet
TCE IN SOIL, FROM 0 TO 30 FEET
1551 EAST ORANGETHORPE AVE
Rev. 1

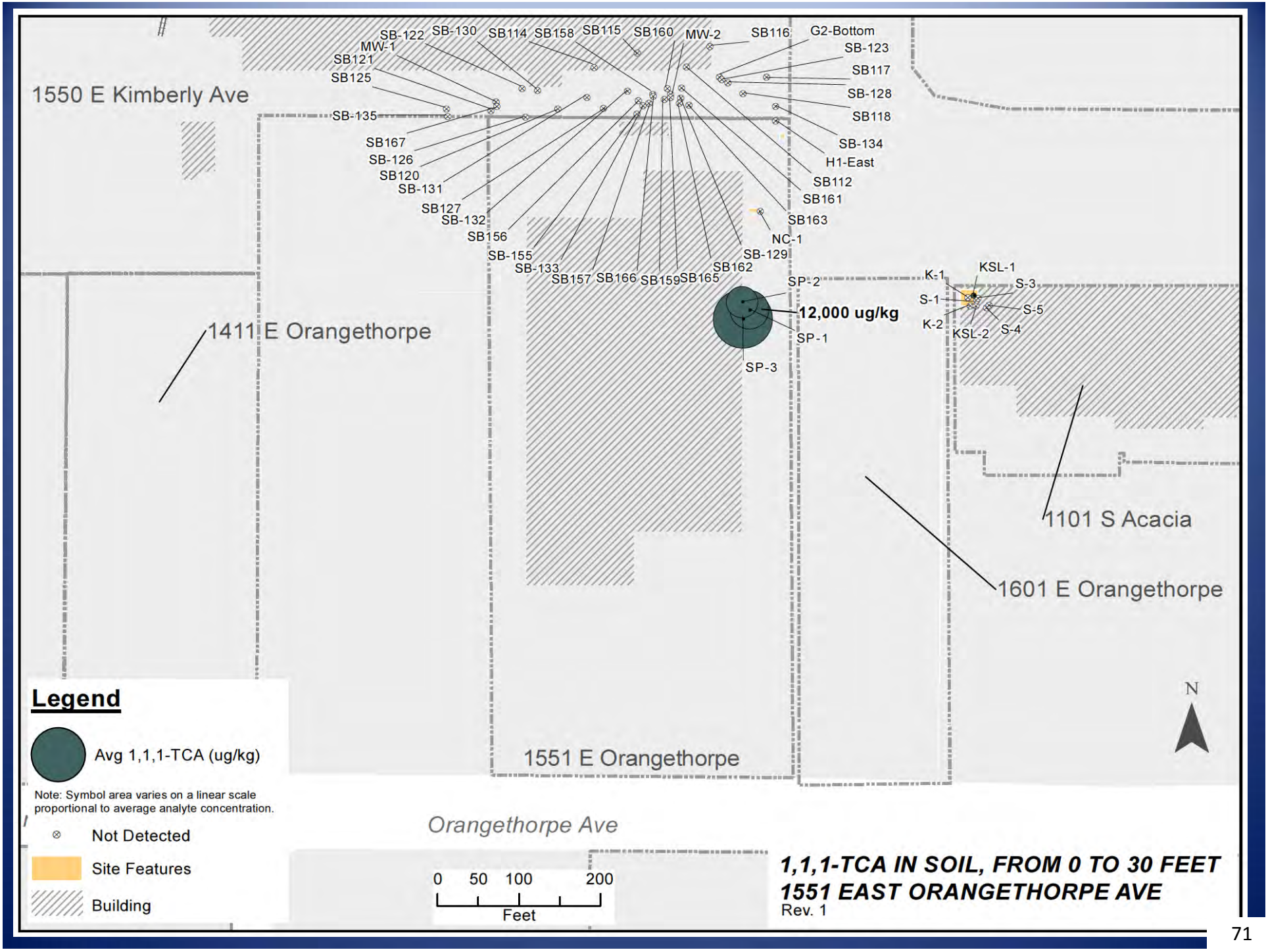

1550 E Kimberly Ave
1411 E Orangethorpe
1551 E Orangethorpe
1601 E Orangethorpe
1101 S Acacia
Orangethorpe Ave
SB166
MW-2
SVE5
SVE7
SB-123
SB-128
SB-122
SB-130
SB-132
SVE3
SB167
SB-131
SB-135
MW-1
SVE1
SB-134
SVE6
SB-133
SB-129
132 ug/kg
SVE4
SVE8
SB165
BH-15
BH-14
N
Legend
Avg TCE (ug/kg)
Note: Symbol area varies on a linear scale proportional to average analyte concentration.
Not Detected
Site Features
Building
0 50 100 200
Feet
TCE IN SOIL, FROM 30 TO 60 FEET
1551 EAST ORANGETHORPE AVE
Rev. 1

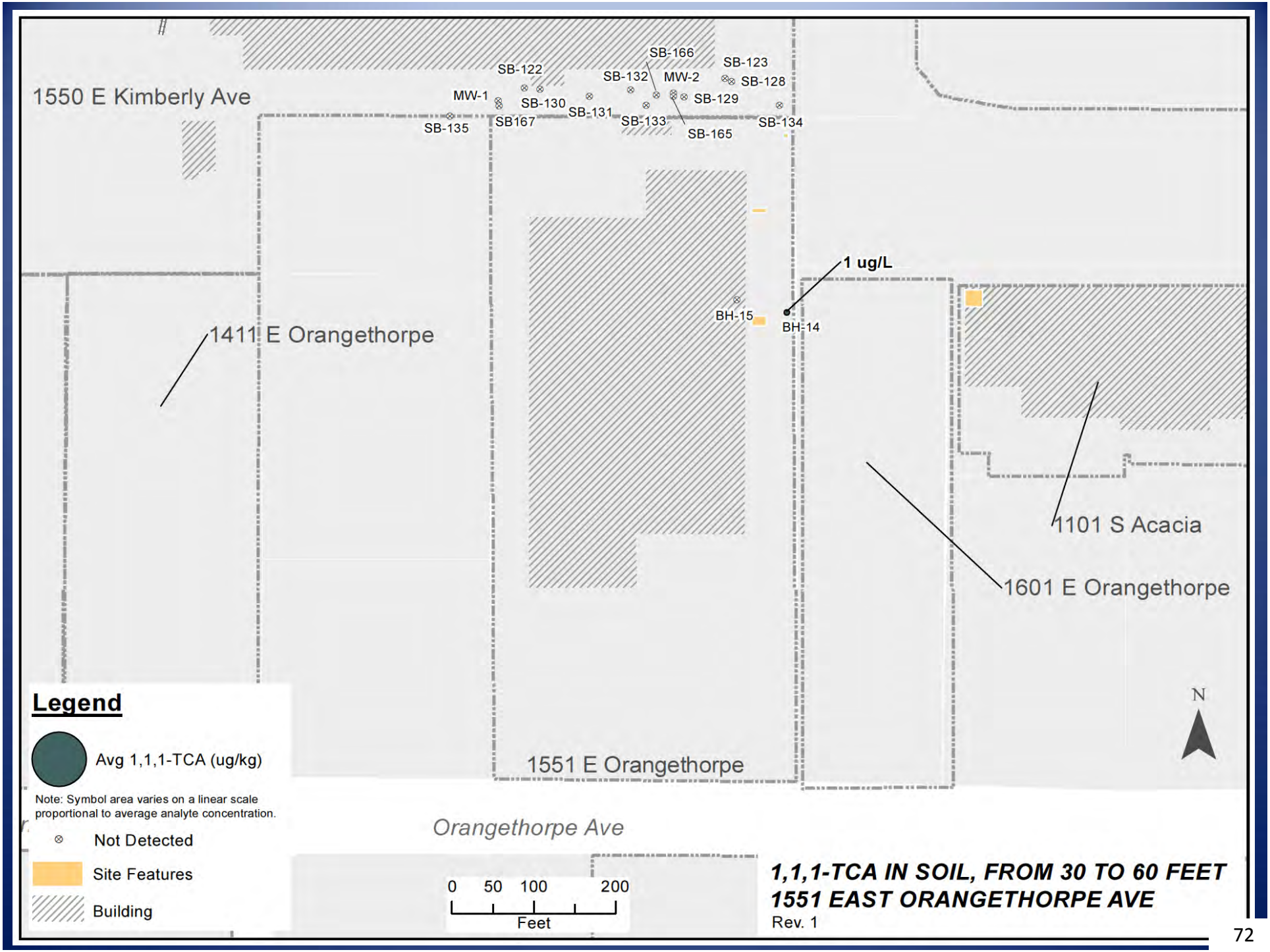

1550 E Kimberly Ave
SB-132
SB-128
SB-130
SB-131
MW-2
MW-1
SB-133
SB-134
SB-135
128 ug/kg
BH-15
BH-14
1411 E Orangethorpe
1101 S Acacia
1601 E Orangethorpe
1551 E Orangethorpe
Orangethorpe Ave
N
Legend
Avg TCE (ug/kg)
Note: Symbol area varies on a linear scale proportional to average analyte concentration.
Not Detected
Site Features
Building
0 50 100 200
Feet
TCE IN SOIL, GREATER THAN 60 FEET
1551 EAST ORANGETHORPE AVE
Rev. 1

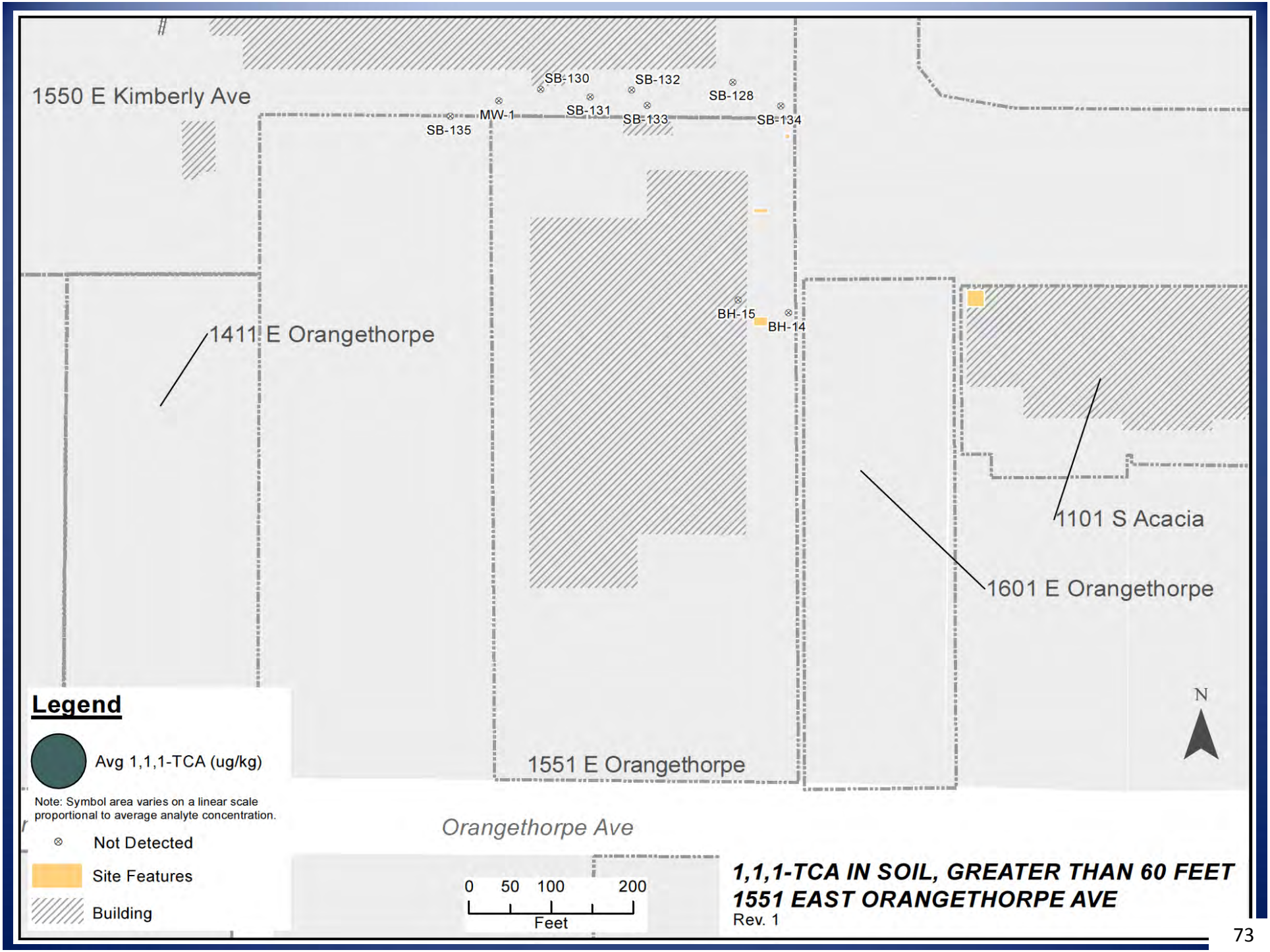

1550 E Kimberly Ave
1411 E Orangethorpe
1551 E Orangethorpe
1601 E Orangethorpe
1101 S Acacia
Orangethorpe Ave
SB-132
SB160
SB114
SB157
SB115
H4N-North
SB116
MW-2
H3-North
SB-131
SB112
SVE7
SB-123
SB-130
SB117
SB-122
SB-128
SVE3
SVE6
SB161
MW-1
SB167
SB118
SB125
SB121
SVE5
SB-134
SB-135
SB119
H2-East
SB-126
SB165
H1-East
SB120
SVE8
H1-Bottom
SB127
SB159
SB162
H1-South
SB156
H2-West
H4N-Bottom
SB-133
H1-West
H4N-South
NC-1
SB-129
SB155
SB158
SB163
H3-South
H4-Bottom
H4-East
SB166
BH-12
BH-8
SP-2
BH-11
BH-13
BH-7
BH-10
BH-2
BH-1
BH-9
BH-4A
SP-3
SC-1
BH-3
SP-1
BH-6A
BH-5
BH-5A
89,500 ug/kg
KSL-1
S-1
S-3
K-1
S-5
K-2
KSL-2
S-4
N
Legend
Avg PCE (ug/kg)
Note: Symbol area varies on a linear scale proportional to average analyte concentration.
Not Detected
Site Features
Building
0
50
100
200
Feet
PCE IN SOIL, FROM 0 TO 30 FEET
1551 EAST ORANGETHORPE AVE
Rev. 1

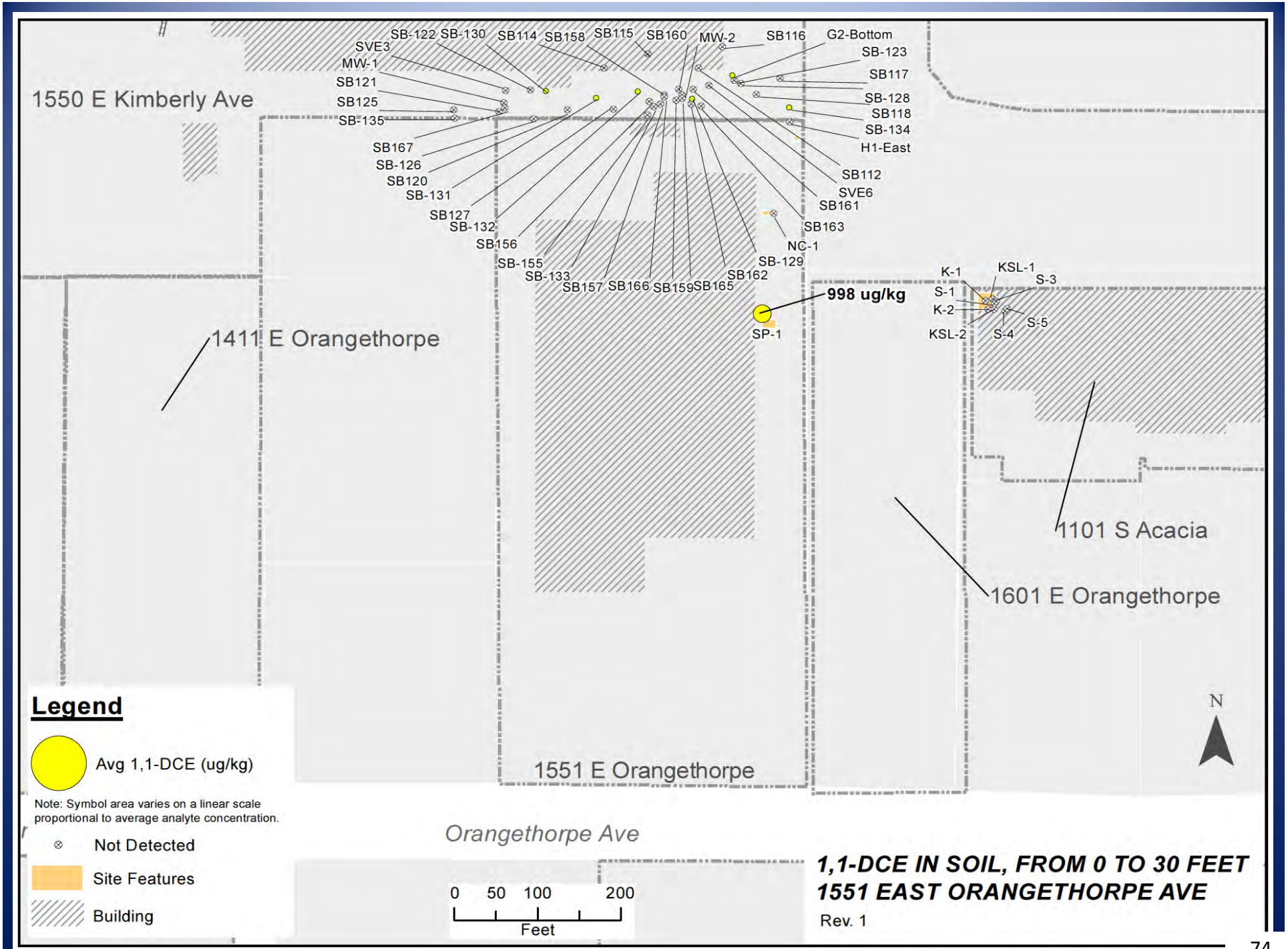

1550 E Kimberly Ave
1411 E Orangethorpe
1551 E Orangethorpe
1601 E Orangethorpe
1101 S Acacia
Orangethorpe Ave
SB166
MW-2
SVE5
SVE7
SB-122
SB-130
SB-123
SB-128
SVE3
MW-1
SB-132
SB-134
SB-131
SVE1
SB-135
SVE2
SB-167
SB-133
SVE6
SB-129
SVE4
SVE8
SB165
BH-12
B H -8
BH-13
5,000 ug/kg
BH-11
BH-4A
BH-14
BH-15
BH-10
BH-1
BH-9
BH-8
BH-5A
N
Legend
Avg PCE (ug/kg)
Note: Symbol area varies on a linear scale proportional to average analyte concentration.
Not Detected
Site Features
Building
0 50 100 200
Feet
PCE IN SOIL, FROM 30 TO 60 FEET
1551 EAST ORANGETHORPE AVE
Rev. 1

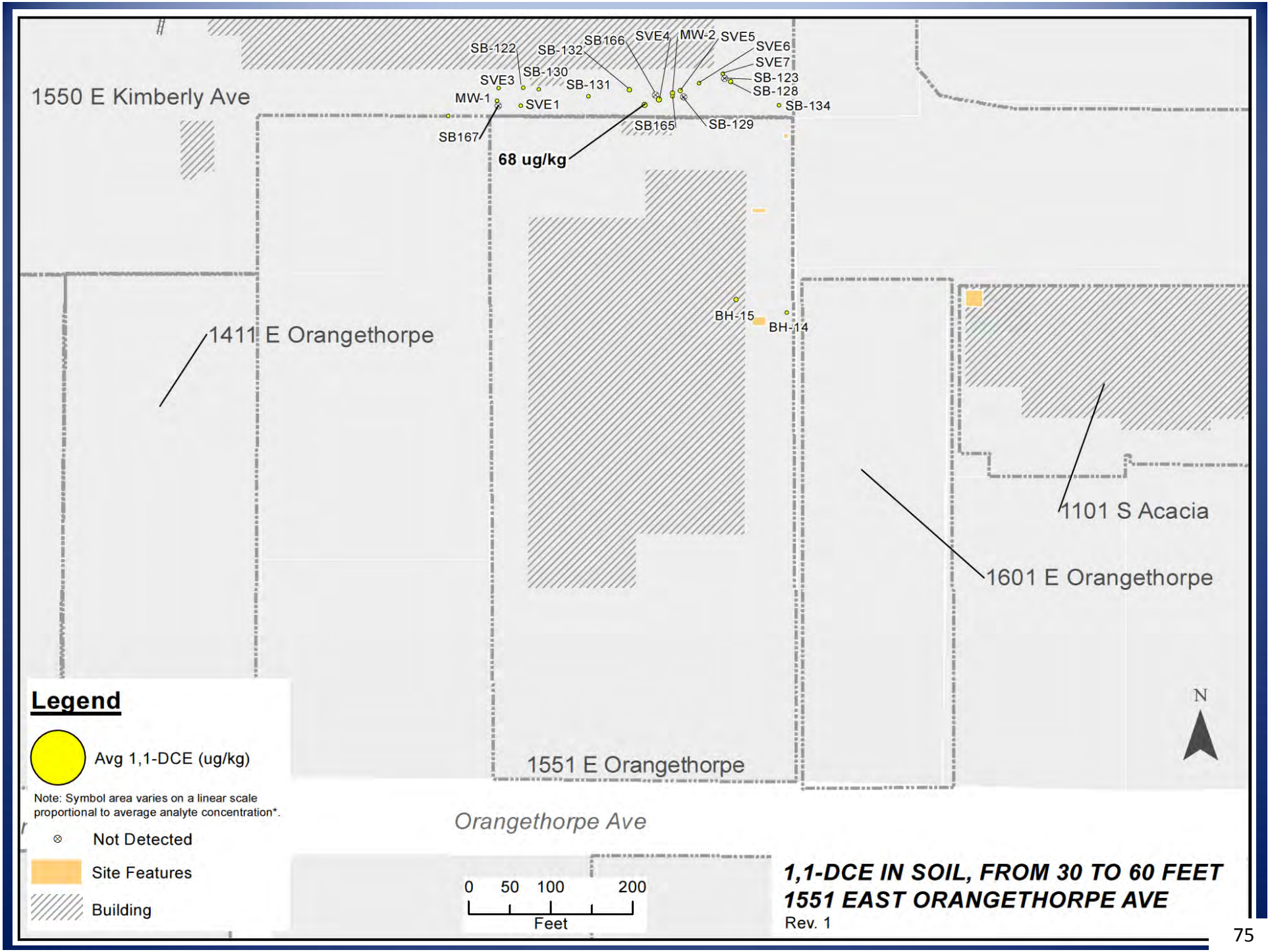

1550 E Kimberly Ave
SB-130
SB-132
SB-128
MW-1
SB-135
SB-131
MW-2
SB-133
SB-134
59 ug/kg
BH-15
BH-14
1411 E Orangethorpe
1101 S Acacia
1601 E Orangethorpe
1551 E Orangethorpe
Orangethorpe Ave
N
Legend
Avg PCE (ug/kg)
Note: Symbol area varies on a linear scale proportional to average analyte concentration.
Not Detected
Site Features
Building
0 50 100 200
Feet
PCE IN SOIL, GREATER THAN 60 FEET
1551 EAST ORANGETHORPE AVE
Rev. 1

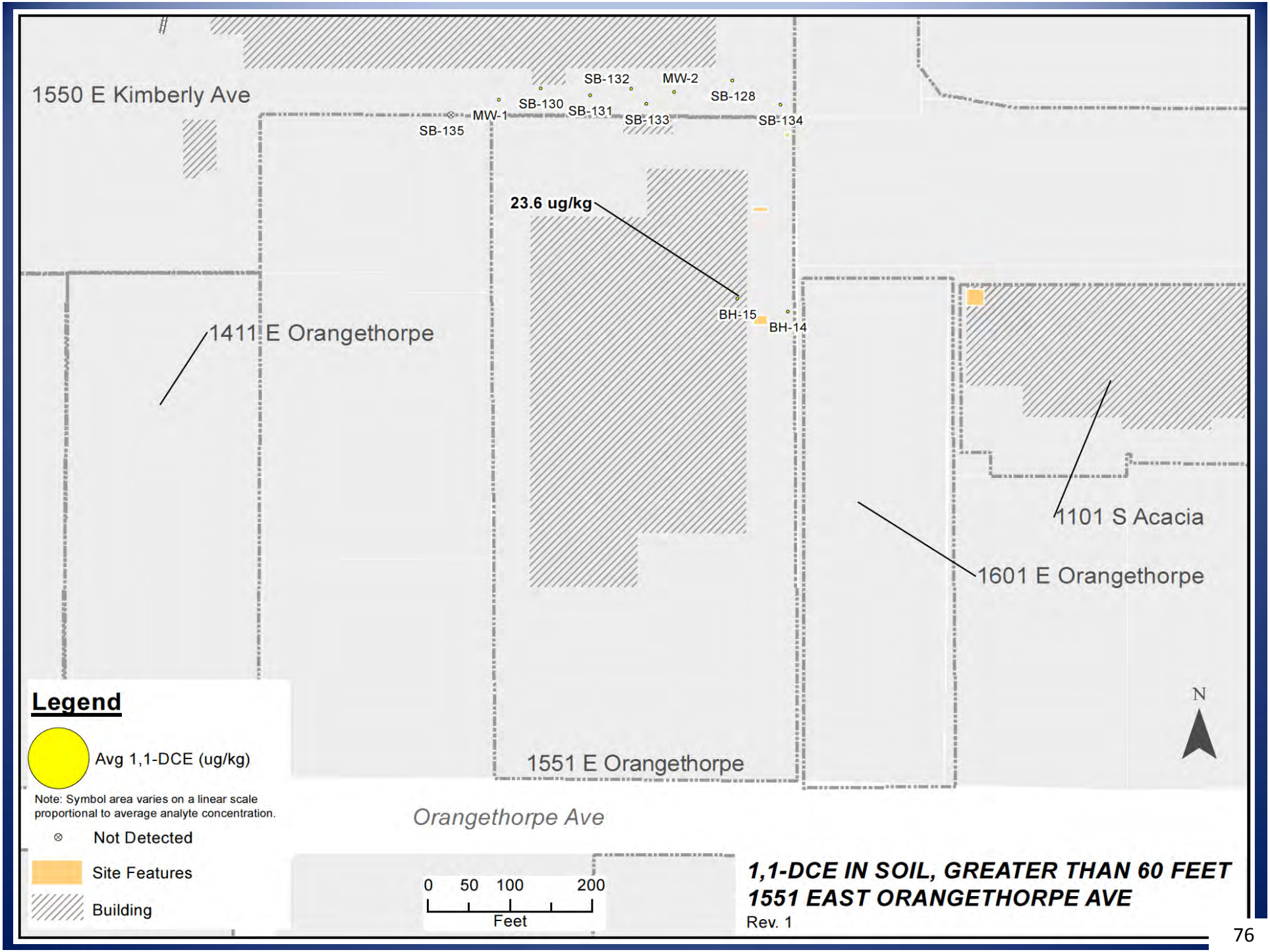

1550 E Kimberly Ave
1411 E Orangethorpe
1551 E Orangethorpe
1101 S Acacia
1601 E Orangethorpe
Orangethorpe Ave
SB-122
SB-130
SB114
SB158
SB115
SB160
MW-2
SB116
G2-Bottom
MW-1
SB-123
SB121
SB117
SB125
SB-128
SB-135
SB118
SB167
SB-134
SB-126
H1-East
SB120
SB112
SB-131
SB161
SB127
SB-132
SB163
SB156
NC-1
SB-155
SB-129
SB-133
SB162
SB157
SB166
SB159
SB165
SP-2
12,000 ug/kg
SP-1
SP-3
K-1
KSL-1
S-3
S-1
S-5
K-2
KSL-2
S-4
N
Legend
Avg 1,1,1-TCA (ug/kg)
Note: Symbol area varies on a linear scale proportional to average analyte concentration.
Not Detected
Site Features
Building
0
50
100
200
Feet
1,1,1-TCA IN SOIL, FROM 0 TO 30 FEET
1551 EAST ORANGETHORPE AVE
Rev. 1

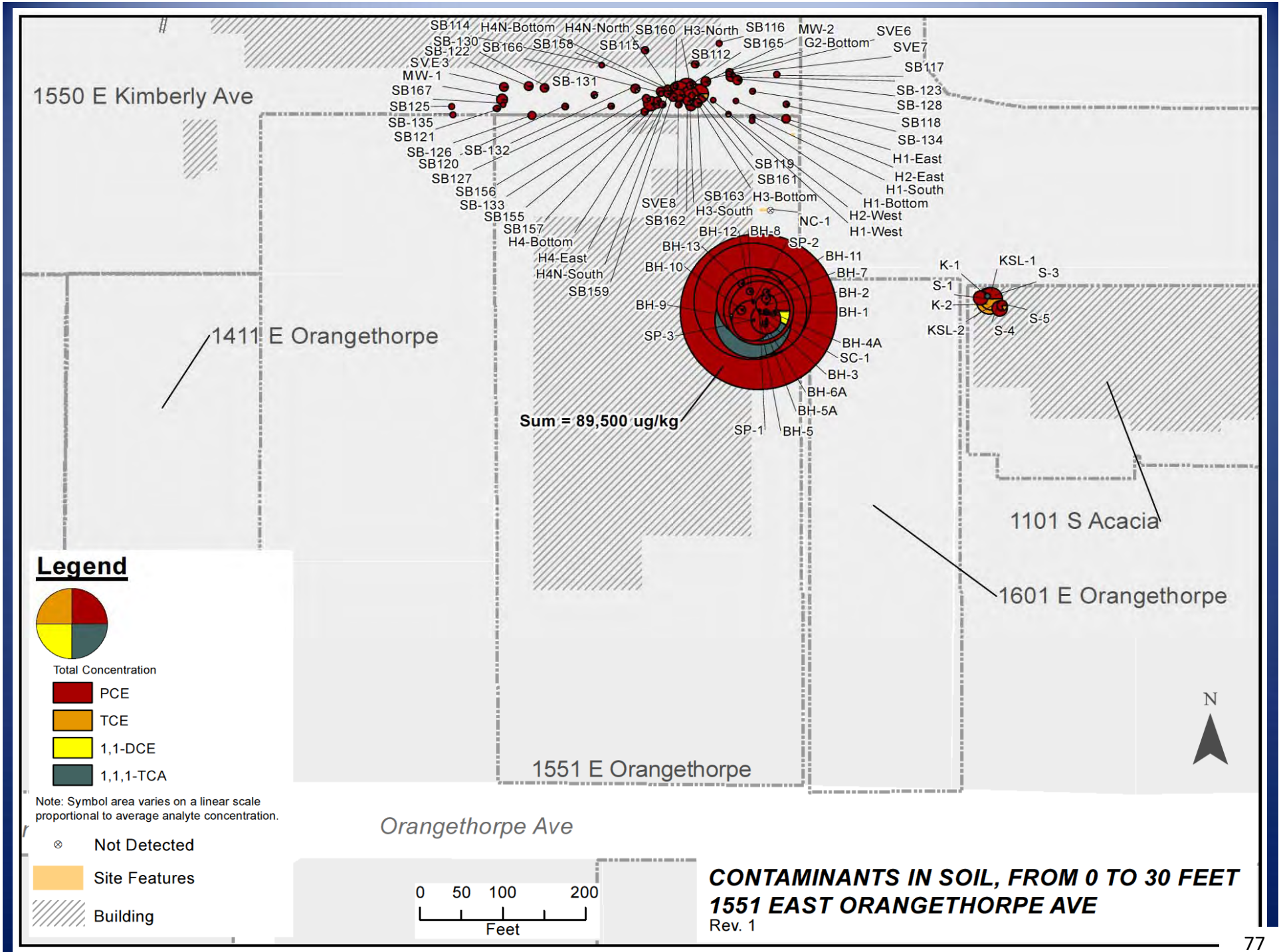

1550 E Kimberly Ave
SB-166
SB-122
SB-123
SB-132
MW-2
SB-128
MW-1
SB-130
SB-129
SB-131
SB-135
SB167
SB-133
SB-165
SB-134
1 ug/L
BH-15
BH-14
1411 E Orangethorpe
1101 S Acacia
1601 E Orangethorpe
N
1551 E Orangethorpe
Orangethorpe Ave
Legend
Avg 1,1,1-TCA (ug/kg)
Note: Symbol area varies on a linear scale proportional to average analyte concentration.
Not Detected
Site Features
Building
0 50 100 200
Feet
1,1,1-TCA IN SOIL, FROM 30 TO 60 FEET
1551 EAST ORANGETHORPE AVE
Rev. 1

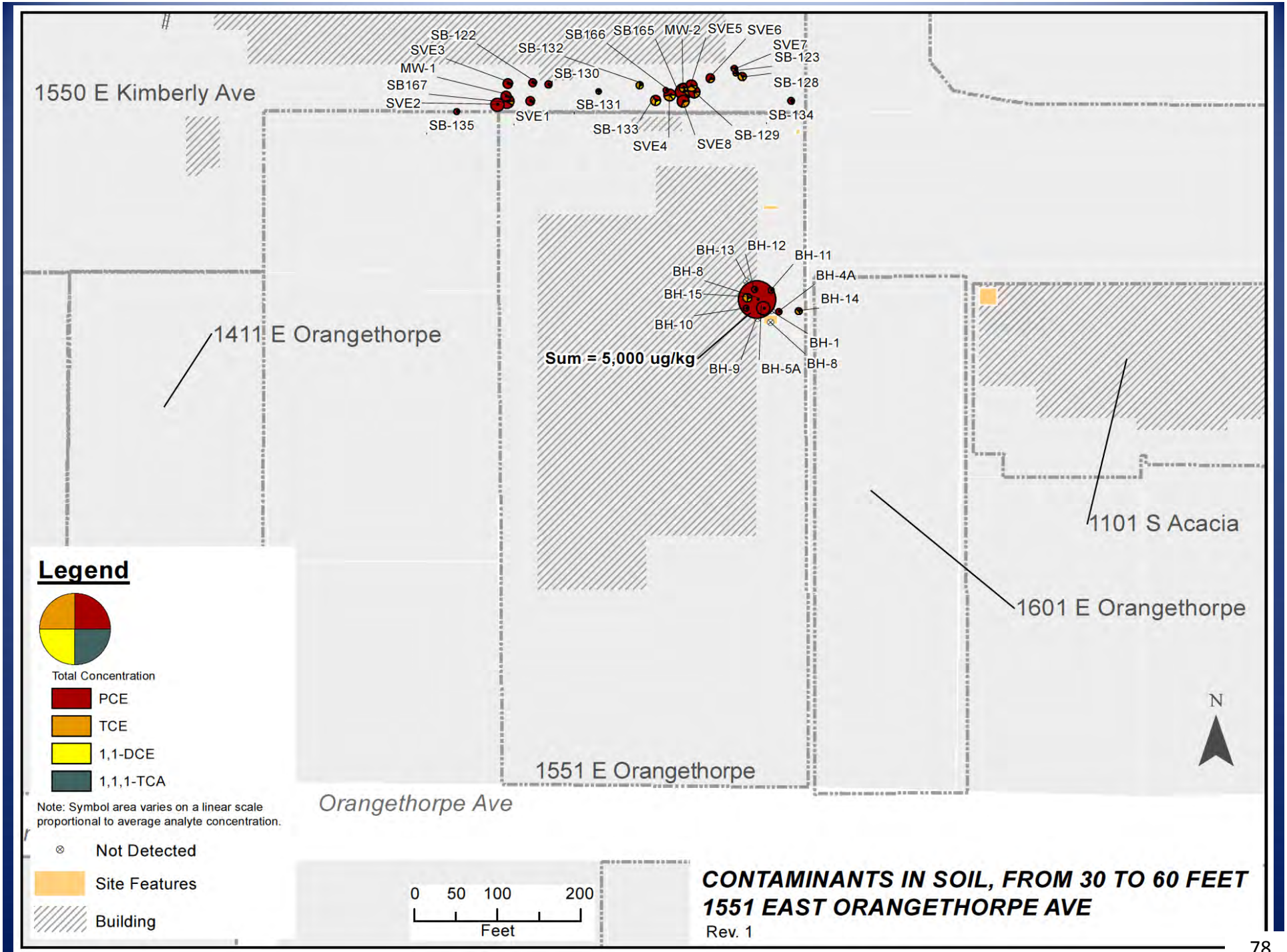

1550 E Kimberly Ave
SB-130
SB-132
SB-128
MW-1
SB-131
SB-133
SB-134
SB-135
BH-15
BH-14
1411 E Orangethorpe
1101 S Acacia
1601 E Orangethorpe
1551 E Orangethorpe
Orangethorpe Ave
N
Legend
Avg 1,1,1-TCA (ug/kg)
Note: Symbol area varies on a linear scale proportional to average analyte concentration.
Not Detected
Site Features
Building
0 50 100 200
Feet
1,1,1-TCA IN SOIL, GREATER THAN 60 FEET
1551 EAST ORANGETHORPE AVE
Rev. 1

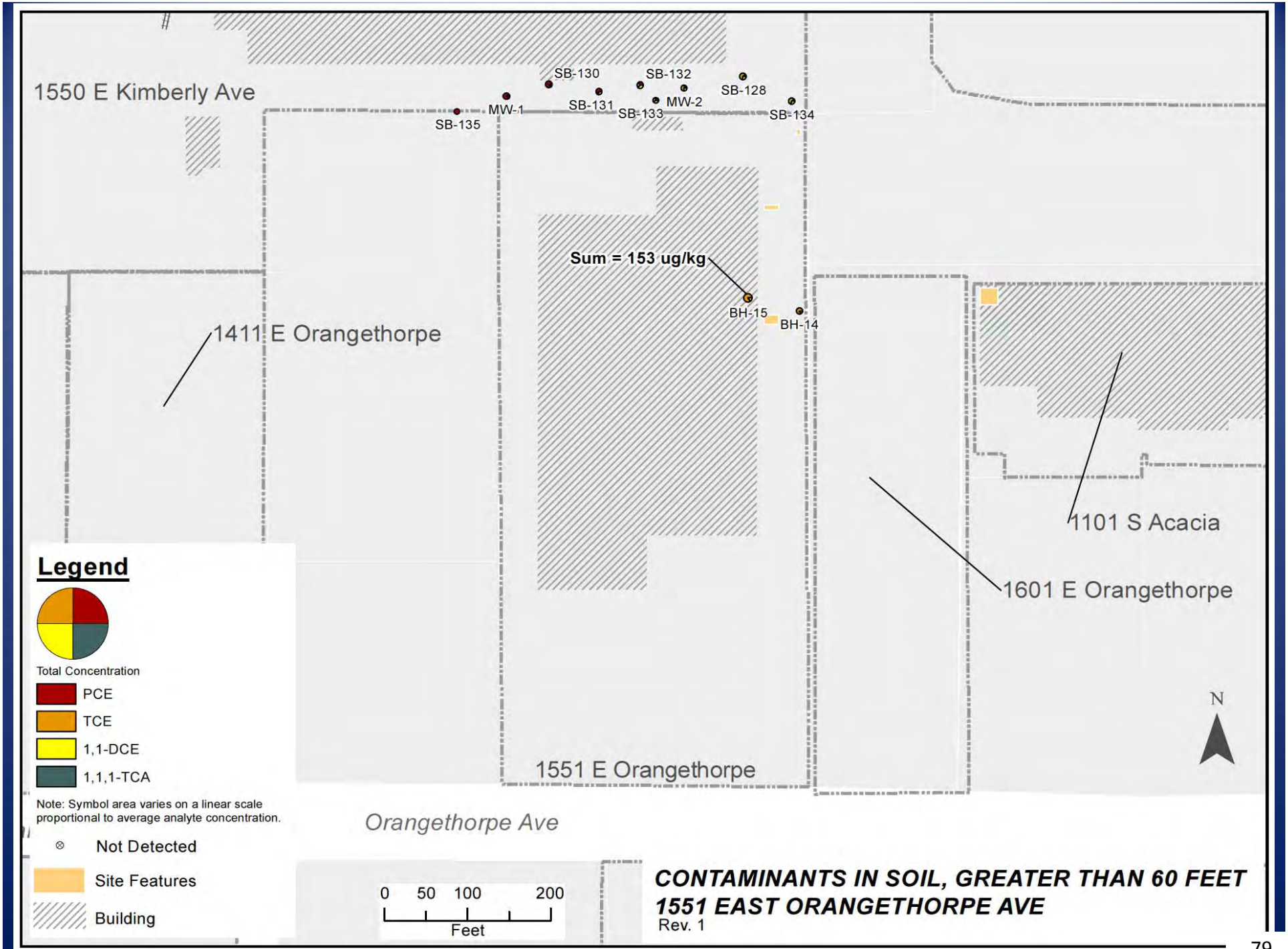

1550 E Kimberly Ave
1411 E Orangethorpe
1551 E Orangethorpe
1601 E Orangethorpe
1101 S Acacia
Orangethorpe Ave
SB-122
SB-130
SB114
SB158
SB115
SB160
MW-2
SB116
G2-Bottom
SB-123
SB117
SB-128
SB118
SB-134
H1-East
SB112
SVE6
SB161
SB163
NC-1
SB-129
SB162
SB165
SB159
SB166
SB157
SB-133
SB-155
SB156
SB-132
SB127
SB-131
SB120
SB-126
SB167
SB135
SB125
SB121
MW-1
SVE3
998 ug/kg
SP-1
K-1
KSL-1
S-3
S-1
K-2
S-5
KSL-2
S-4
N
Legend
Avg 1,1-DCE (ug/kg)
Note: Symbol area varies on a linear scale proportional to average analyte concentration.
Not Detected
Site Features
Building
0
50
100
200
Feet
1,1-DCE IN SOIL, FROM 0 TO 30 FEET
1551 EAST ORANGETHORPE AVE
Rev. 1


1550 E Kimberly Ave
SB-122
SB-132
SB166
SVE4
MW-2
SVE5
SVE6
SVE7
SB-123
SB-128
SB-134
SB-130
SVE3
SB-131
MW-1
SVE1
SB167
68 ug/kg
SB165
SB-129
BH-15
BH-14
1411 E Orangethorpe
1101 S Acacia
1601 E Orangethorpe
1551 E Orangethorpe
Orangethorpe Ave
N
Legend
Avg 1,1-DCE (ug/kg)
Note: Symbol area varies on a linear scale proportional to average analyte concentration*.
Not Detected
Site Features
Building
0 50 100 200
Feet
1,1-DCE IN SOIL, FROM 30 TO 60 FEET
1551 EAST ORANGETHORPE AVE
Rev. 1


1550 E Kimberly Ave
SB-132
MW-2
SB-128
SB-130
MW-1
SB-131
SB-133
SB-134
SB-135
23.6 ug/kg
BH-15
BH-14
1411 E Orangethorpe
1101 S Acacia
1601 E Orangethorpe
1551 E Orangethorpe
Orangethorpe Ave
N
Legend
Avg 1,1-DCE (ug/kg)
Note: Symbol area varies on a linear scale proportional to average analyte concentration.
Not Detected
Site Features
Building
0 50 100 200
Feet
1,1-DCE IN SOIL, GREATER THAN 60 FEET
1551 EAST ORANGETHORPE AVE
Rev. 1


1550 E Kimberly Ave
1411 E Orangethorpe
1551 E Orangethorpe
1601 E Orangethorpe
1101 S Acacia
Orangethorpe Ave
SB114
H4N-Bottom
H4N-North
SB160
H3-North
SB116
MW-2
SVE6
SB-130
SB166
SB158
SB115
SB165
G2-Bottom
SVE7
SB-122
SB112
SVE3
SB117
MW-1
SB-131
SB167
SB-123
SB125
SB-128
SB-135
SB118
SB121
SB-134
SB-126
SB-132
H1-East
SB120
SB119
H2-East
SB127
SB161
H1-South
SB156
SB163
H3-Bottom
H1-Bottom
SB-133
SVE8
H3-South
H2-West
SB155
SB162
NC-1
H1-West
SB157
BH-12
BH-8
SP-2
H4-Bottom
BH-13
BH-11
H4-East
BH-10
BH-7
H4N-South
SB159
BH-2
BH-9
BH-1
SP-3
BH-4A
SC-1
BH-3
BH-6A
BH-5A
SP-1
BH-5
Sum = 89,500 ug/kg
K-1
KSL-1
S-3
S-1
K-2
S-5
KSL-2
S-4
N
Legend
Total Concentration
PCE
TCE
1,1-DCE
1,1,1-TCA
Note: Symbol area varies on a linear scale proportional to average analyte concentration.
Not Detected
Site Features
Building
0
50
100
200
Feet
CONTAMINANTS IN SOIL, FROM 0 TO 30 FEET
1551 EAST ORANGETHORPE AVE
Rev. 1


1550 E Kimberly Ave
1411 E Orangethorpe
1551 E Orangethorpe
1601 E Orangethorpe
1101 S Acacia
Orangethorpe Ave
SB-122
SVE3
MW-1
SB167
SVE2
SB-135
SVE1
SB-132
SB-130
SB-131
SB166
SB165
MW-2
SVE5
SVE6
SVE7
SB-123
SB-128
SB-134
SB-133
SVE4
SVE8
SB-129
BH-13
BH-12
BH-11
BH-8
BH-4A
BH-15
BH-14
BH-10
BH-1
BH-9
BH-5A
BH-8
Sum = 5,000 ug/kg
Legend
Total Concentration
PCE
TCE
1,1-DCE
1,1,1-TCA
Note: Symbol area varies on a linear scale proportional to average analyte concentration.
Not Detected
Site Features
Building
0 50 100 200
Feet
N
CONTAMINANTS IN SOIL, FROM 30 TO 60 FEET
1551 EAST ORANGETHORPE AVE
Rev. 1


1550 E Kimberly Ave
SB-130
SB-132
SB-128
MW-1
SB-131
MW-2
SB-135
SB-133
SB-134
Sum = 153 ug/kg
BH-15
BH-14
1411 E Orangethorpe
1101 S Acacia
1601 E Orangethorpe
1551 E Orangethorpe
Orangethorpe Ave
N
Legend
Total Concentration
PCE
TCE
1,1-DCE
1,1,1-TCA
Note: Symbol area varies on a linear scale proportional to average analyte concentration.
Not Detected
Site Features
Building
0 50 100 200
Feet
CONTAMINANTS IN SOIL, GREATER THAN 60 FEET
1551 EAST ORANGETHORPE AVE
Rev. 1

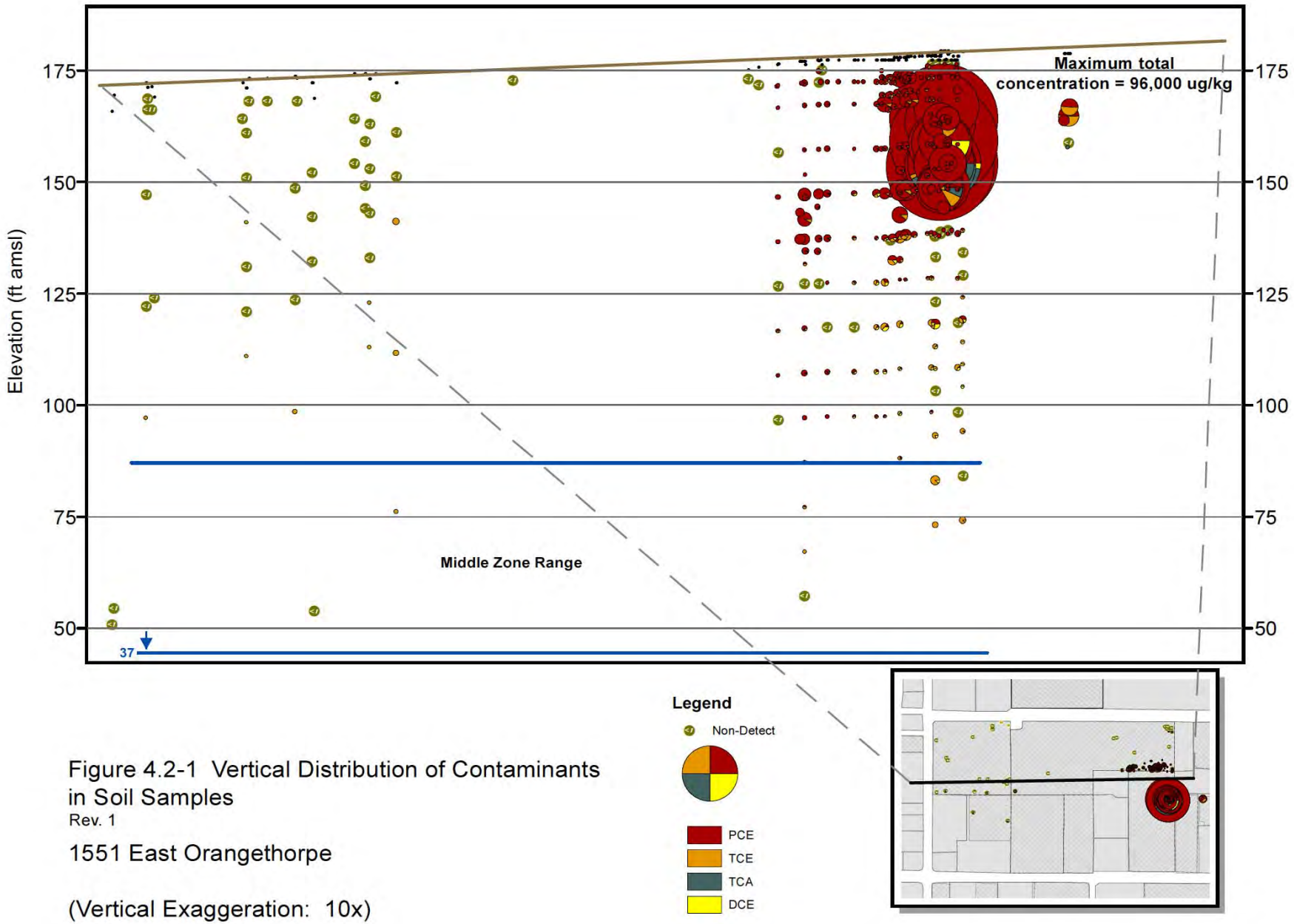


Figure 4.2-1 Vertical Distribution of Contaminants in Soil Samples
Rev. 1

1551 East Orangethorpe

(Vertical Exaggeration: 10x)

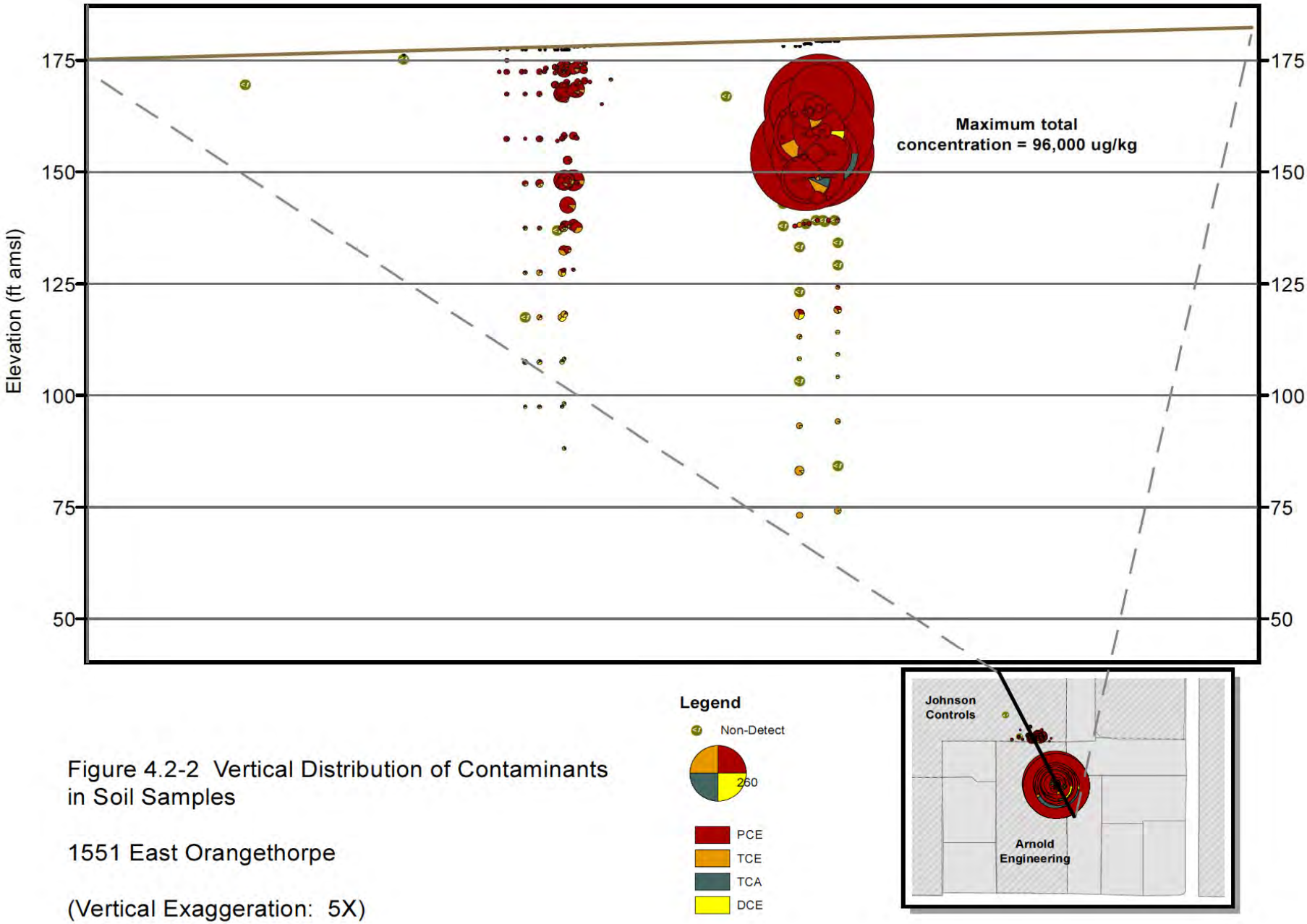


Figure 4.2-2 Vertical Distribution of Contaminants in Soil Samples

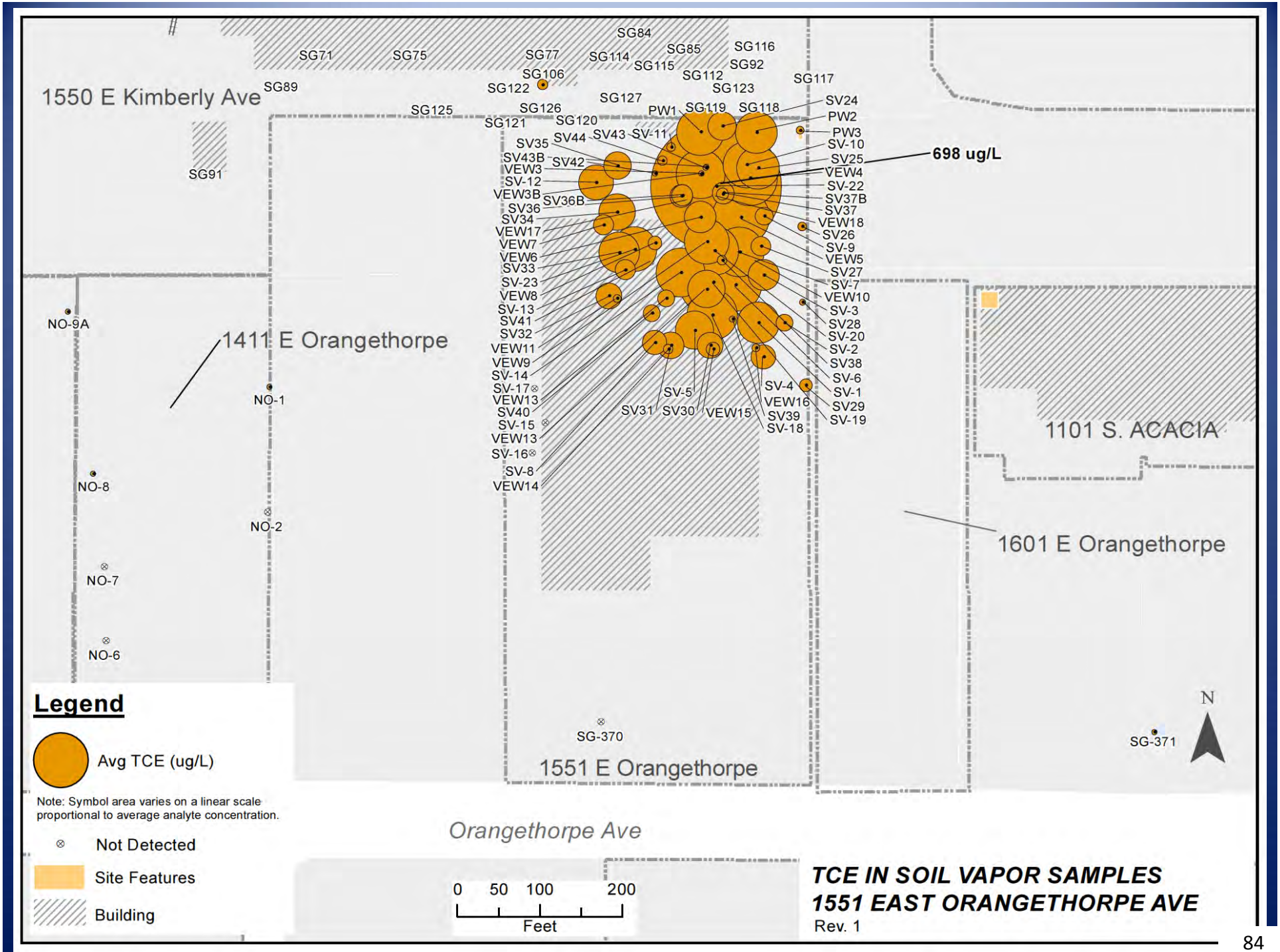
1551 East Orangethorpe

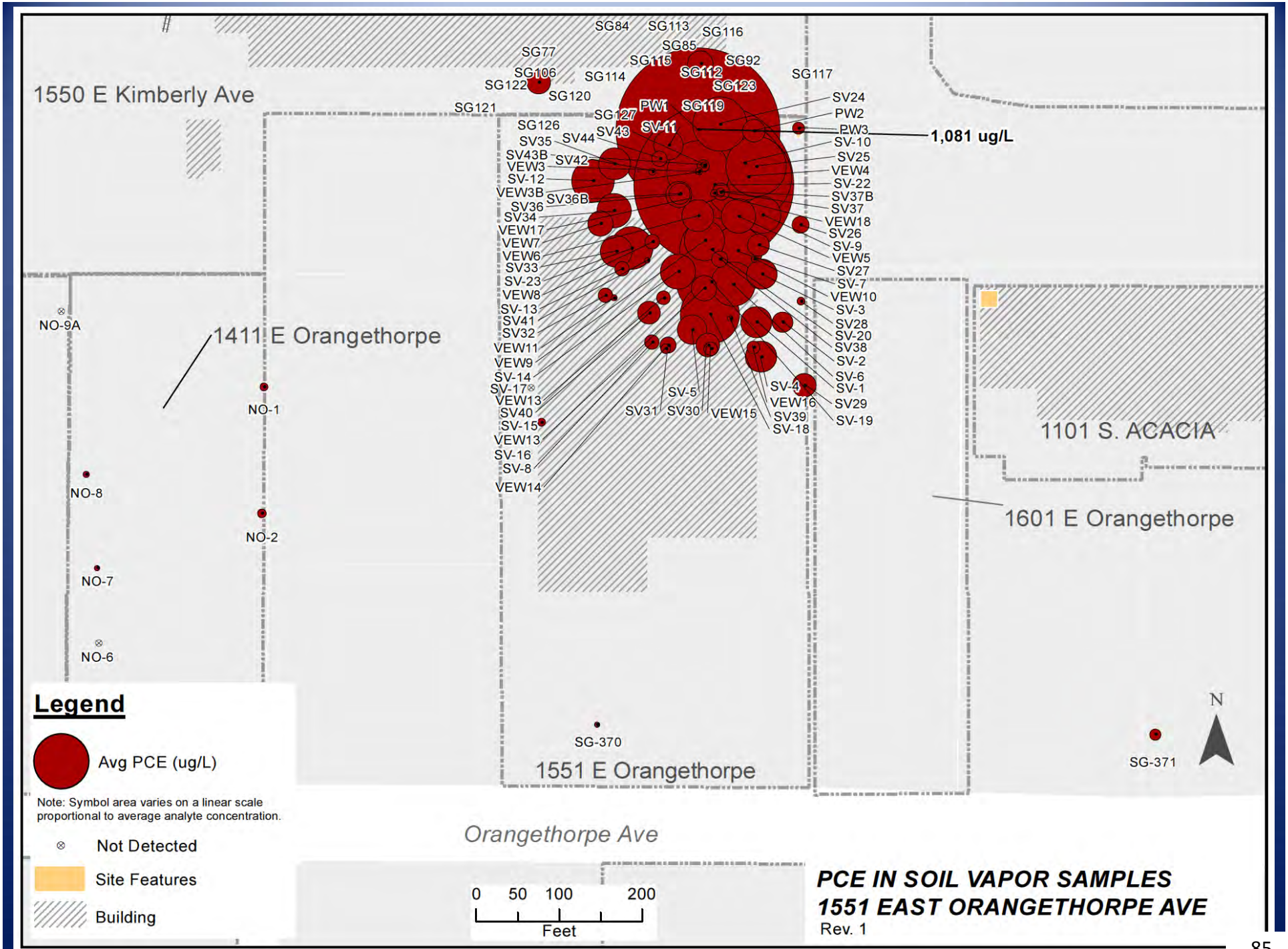
(Vertical Exaggeration: 5X)

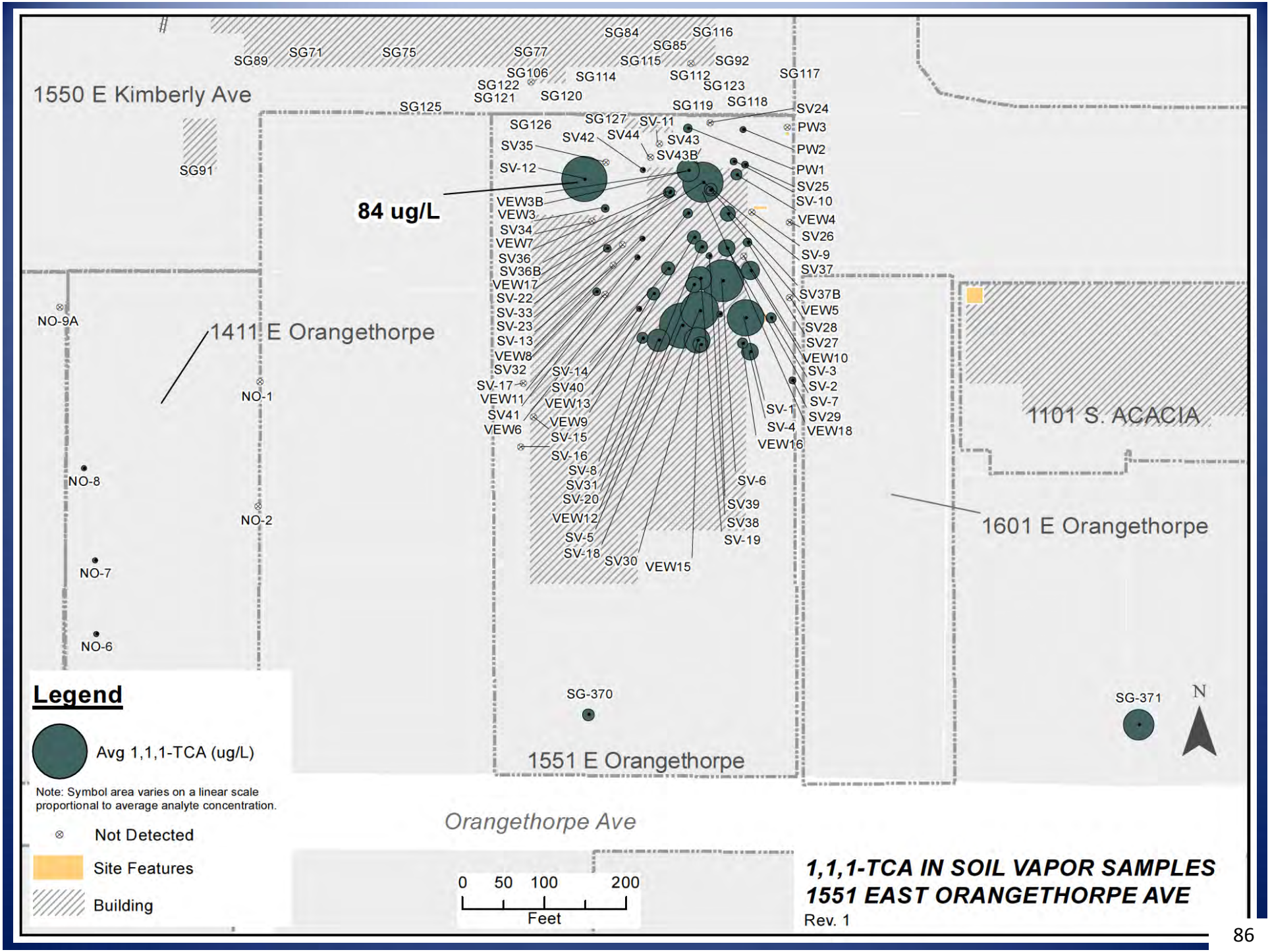
Summary of Soil Data

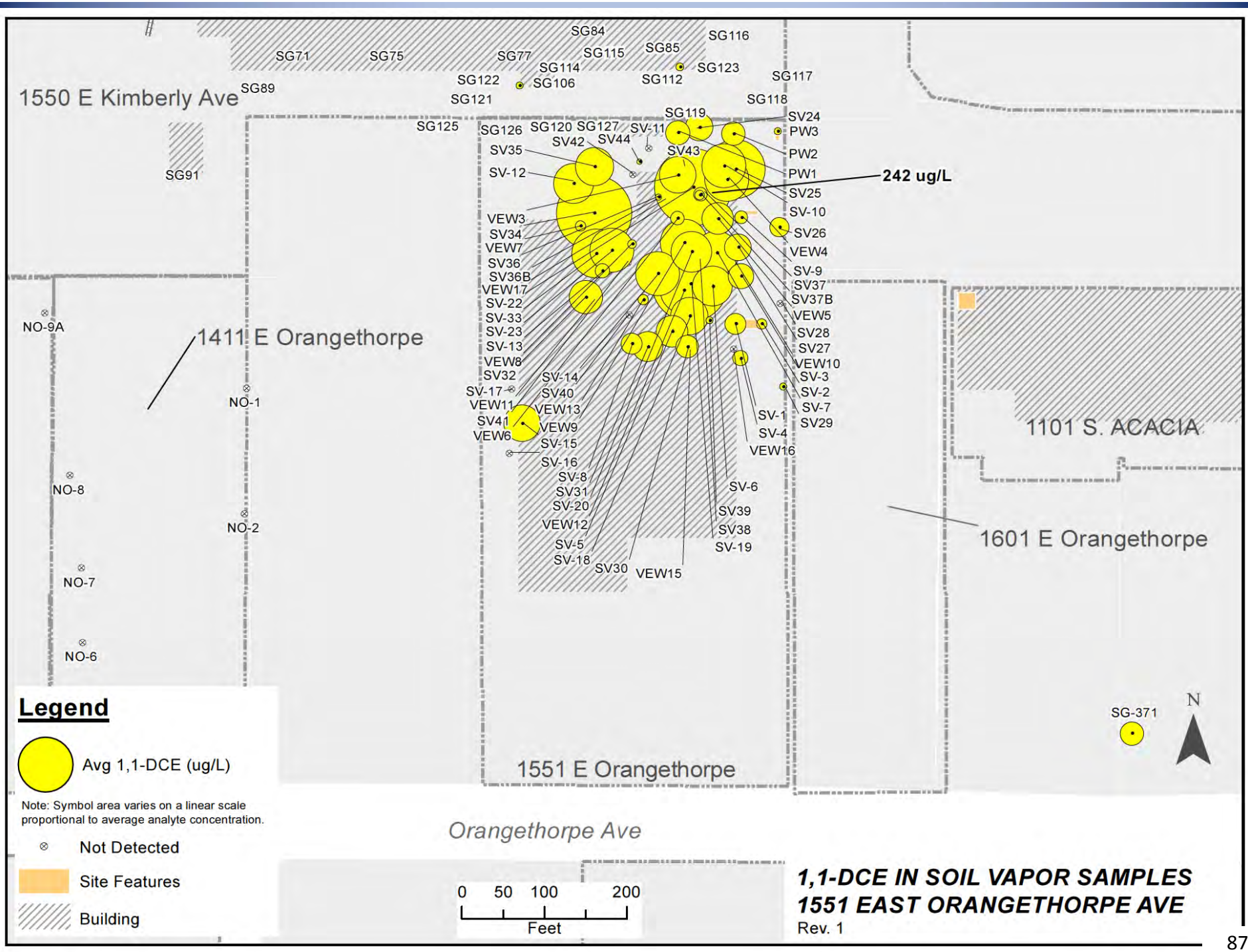
- Limited soil sampling has been performed
- PCE (96,000 ppb), TCE (3,400 ppb), and 1,1,1-TCA (19,600 ppb) were measured near the southern degreaser
- TCE was detected at a depth of 105 feet (160 and 180 ppb)
- Concentrations were many-fold higher than measured on nearby properties

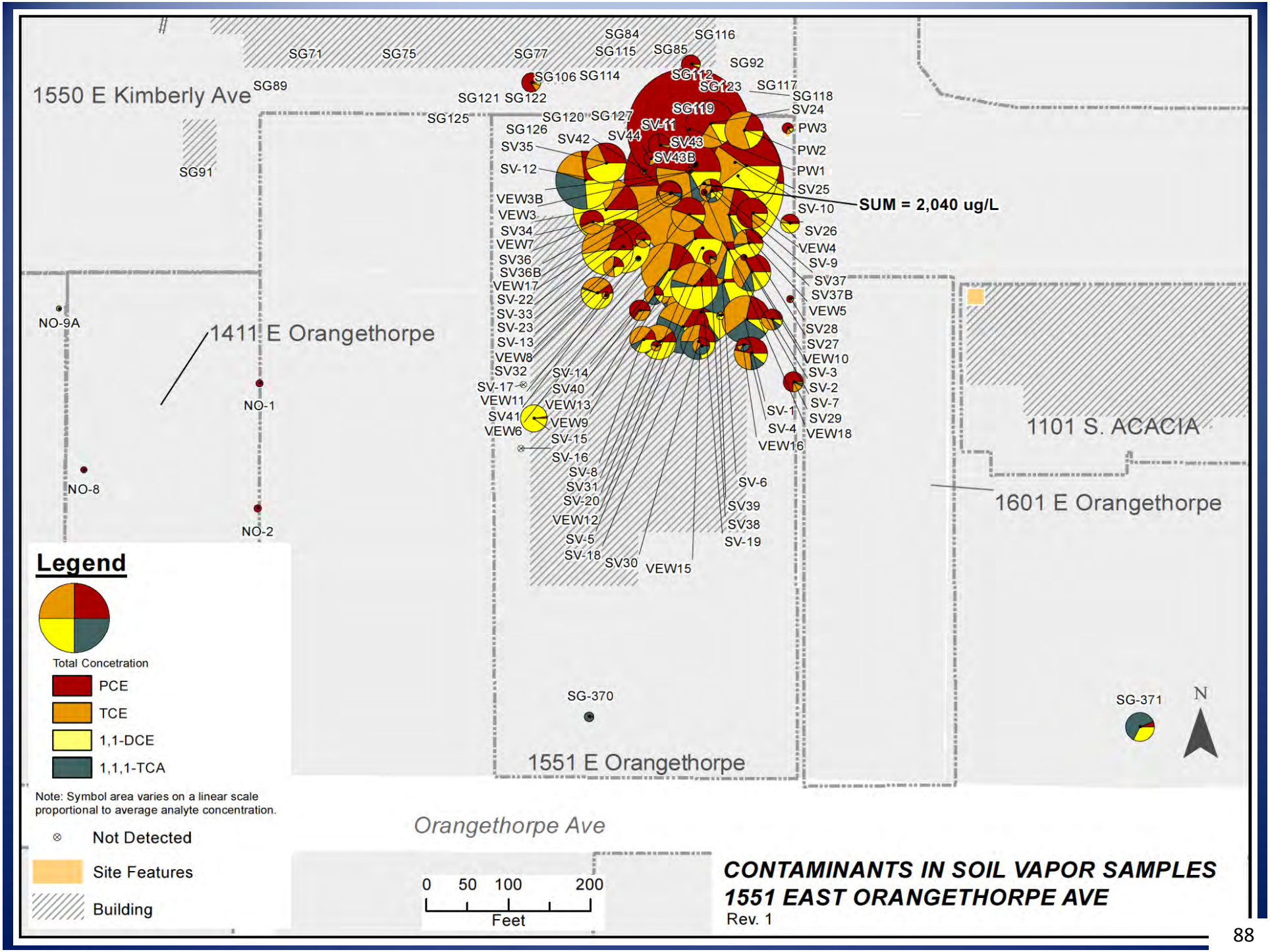
Soil Gas


1550 E Kimberly Ave
1411 E Orangethorpe
1601 E Orangethorpe
1551 E Orangethorpe
1101 S. ACACIA
Orangethorpe Ave
698 ug/L
SG84
SG71
SG75
SG77
SG114
SG85
SG116
SG115
SG92
SG106
SG112
SG117
SG89
SG122
SG123
SG127
SG125
SG126
PW1
SG119
SG118
SG121
SG120
SV24
PW2
PW3
SV44
SV43
SV-11
SV35
SV-10
SV43B
SV42
SV25
VEW3
VEW4
SV-12
SV-22
VEW3B
SV36B
SV37B
SV36
SV37
SV34
VEW18
VEW17
SV26
VEW7
SV-9
VEW6
VEW5
SV33
SV27
SV-23
SV-7
VEW8
VEW10
SV-13
SV-3
SV41
SV28
SV32
SV-20
VEW11
SV-2
VEW9
SV38
SV-14
SV-6
SV-17
SV-5
SV-4
SV-1
VEW13
SV31
SV30
VEW15
VEW16
SV29
SV40
SV39
SV-19
SV-15
SV-18
VEW13
SV-16
SV-8
VEW14
SG91
NO-9A
NO-1
NO-8
NO-2
NO-7
NO-6
SG-370
SG-371
N
Legend
Avg TCE (ug/L)
Note: Symbol area varies on a linear scale proportional to average analyte concentration.
Not Detected
Site Features
Building
0 50 100 200
Feet
TCE IN SOIL VAPOR SAMPLES
1551 EAST ORANGETHORPE AVE
Rev. 1


1550 E Kimberly Ave
1411 E Orangethorpe
1601 E Orangethorpe
1551 E Orangethorpe
1101 S. ACACIA
Orangethorpe Ave
1,081 ug/L
NO-9A
NO-1
NO-8
NO-2
NO-7
NO-6
SG-370
SG-371
SG84 SG113 SG116 SG85 SG77 SG115 SG92 SG106 SG114 SG112 SG117 SG122 SG120 SG123 SG121 SG127 PW1 SG119 SG126 SV-11 SV43 SV35 SV44 SV43B SV42 VEW3 SV-12 VEW3B SV36B SV36 SV34 VEW17 VEW7 VEW6 SV33 SV-23 VEW8 SV-13 SV41 SV32 VEW11 VEW9 SV-14 SV-17 VEW13 SV40 SV-15 VEW13 SV-16 SV-8 VEW14
SV24 PW2 PW3 SV-10 SV25 VEW4 SV-22 SV37B SV37 VEW18 SV26 SV-9 VEW5 SV27 SV-7 VEW10 SV-3 SV28 SV-20 SV38 SV-2 SV-6 SV-1 SV29 SV-19
SV-5 SV31 SV30 VEW15 SV-4 VEW16 SV39 SV-18
Legend
Avg PCE (ug/L)
Note: Symbol area varies on a linear scale proportional to average analyte concentration.
Not Detected
Site Features
Building
0 50 100 200
Feet
N
PCE IN SOIL VAPOR SAMPLES
1551 EAST ORANGETHORPE AVE
Rev. 1


1550 E Kimberly Ave
1411 E Orangethorpe
1551 E Orangethorpe
1601 E Orangethorpe
1101 S. ACACIA
Orangethorpe Ave
84 ug/L
SG89
SG71
SG75
SG77
SG84
SG116
SG85
SG115
SG92
SG106
SG114
SG112
SG123
SG117
SG122
SG121
SG120
SG125
SG119
SG118
SG126
SG127
SV-11
SV24
PW3
PW2
PW1
SV25
SV-10
VEW4
SV26
SV-9
SV37
SV37B
VEW5
SV28
SV27
VEW10
SV-3
SV-2
SV-7
SV29
VEW18
SV-1
SV-4
VEW16
SV-6
SV39
SV38
SV-19
SV-30
VEW15
SV-18
SV-5
VEW12
SV-20
SV31
SV-8
SV-16
SV-15
VEW9
VEW6
SV41
VEW11
SV-17
SV32
VEW8
SV-13
SV-23
SV-33
SV-22
VEW17
SV36B
SV36
VEW7
SV34
VEW3
VEW3B
SV-12
SV35
SV42
SV44
SV43
SV43B
SG91
NO-9A
NO-1
NO-8
NO-2
NO-7
NO-6
SG-370
SG-371
N
Legend
Avg 1,1,1-TCA (ug/L)
Note: Symbol area varies on a linear scale proportional to average analyte concentration.
Not Detected
Site Features
Building
0 50 100 200
Feet
1,1,1-TCA IN SOIL VAPOR SAMPLES
1551 EAST ORANGETHORPE AVE
Rev. 1

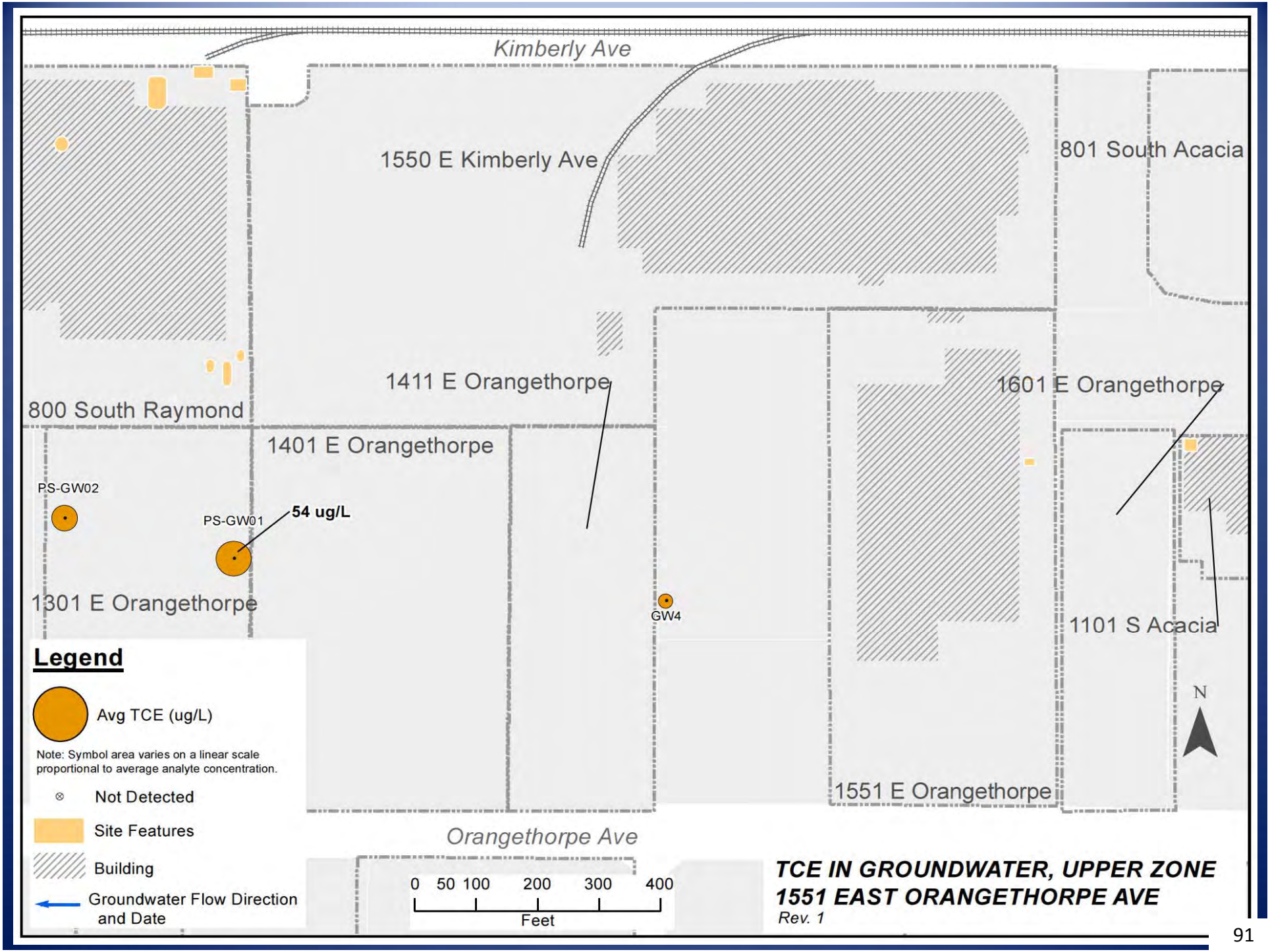

1550 E Kimberly Ave
1411 E Orangethorpe
1551 E Orangethorpe
1601 E Orangethorpe
1101 S. ACACIA
Orangethorpe Ave
242 ug/L
SG84
SG116
SG71
SG75
SG77
SG115
SG85
SG114
SG123
SG122
SG106
SG112
SG117
SG89
SG121
SG118
SG119
SG125
SG126
SG120
SG127
SV-11
SV24
PW3
SV42
SV44
SV35
SV43
PW2
SV-12
PW1
SG91
SV25
SV-10
VEW3
SV26
SV34
VEW7
VEW4
SV36
SV-9
SV36B
SV37
VEW17
SV37B
SV-22
VEW5
SV-33
SV28
SV-23
SV27
SV-13
VEW10
VEW8
SV-3
SV32
SV-14
SV-2
SV-17
SV40
SV-7
VEW11
VEW13
SV-1
SV29
SV41
VEW9
SV-4
VEW6
SV-15
VEW16
SV-16
SV-8
SV-6
SV31
SV39
SV-20
SV38
VEW12
SV-19
SV-5
SV-18
SV30
VEW15
NO-9A
NO-1
NO-8
NO-2
NO-7
NO-6
SG-371
N
Legend
Avg 1,1-DCE (ug/L)
Note: Symbol area varies on a linear scale proportional to average analyte concentration.
Not Detected
Site Features
Building
0
50
100
200
Feet
1,1-DCE IN SOIL VAPOR SAMPLES
1551 EAST ORANGETHORPE AVE
Rev. 1

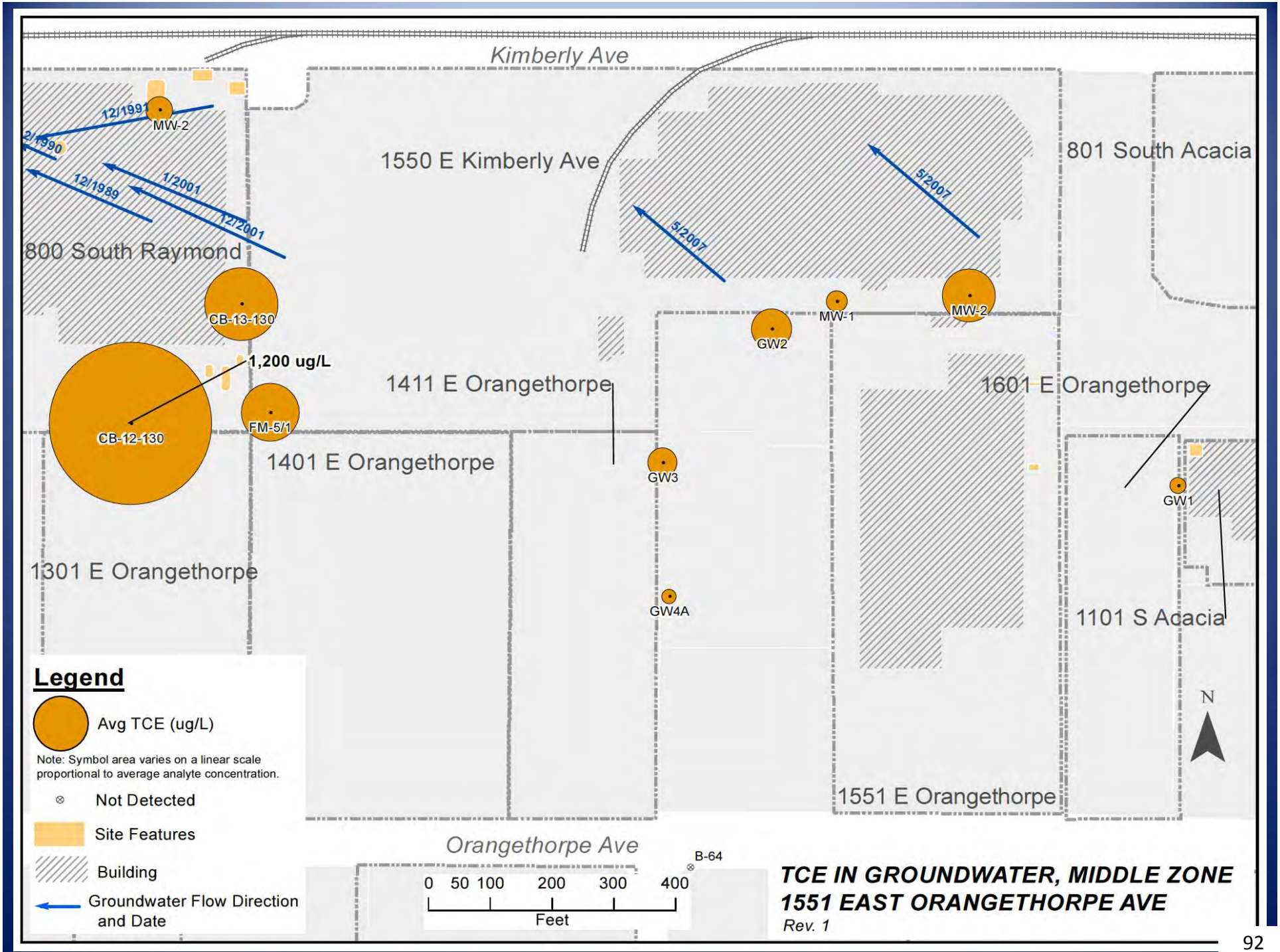

1550 E Kimberly Ave
1411 E Orangethorpe
1101 S. ACACIA
1601 E Orangethorpe
1551 E Orangethorpe
Orangethorpe Ave
SUM = 2,040 ug/L
Legend
Total Concetration
PCE
TCE
1,1-DCE
1,1,1-TCA
Note: Symbol area varies on a linear scale proportional to average analyte concentration.
Not Detected
Site Features
Building
0 50 100 200
Feet
N
CONTAMINANTS IN SOIL VAPOR SAMPLES
1551 EAST ORANGETHORPE AVE
Rev. 1

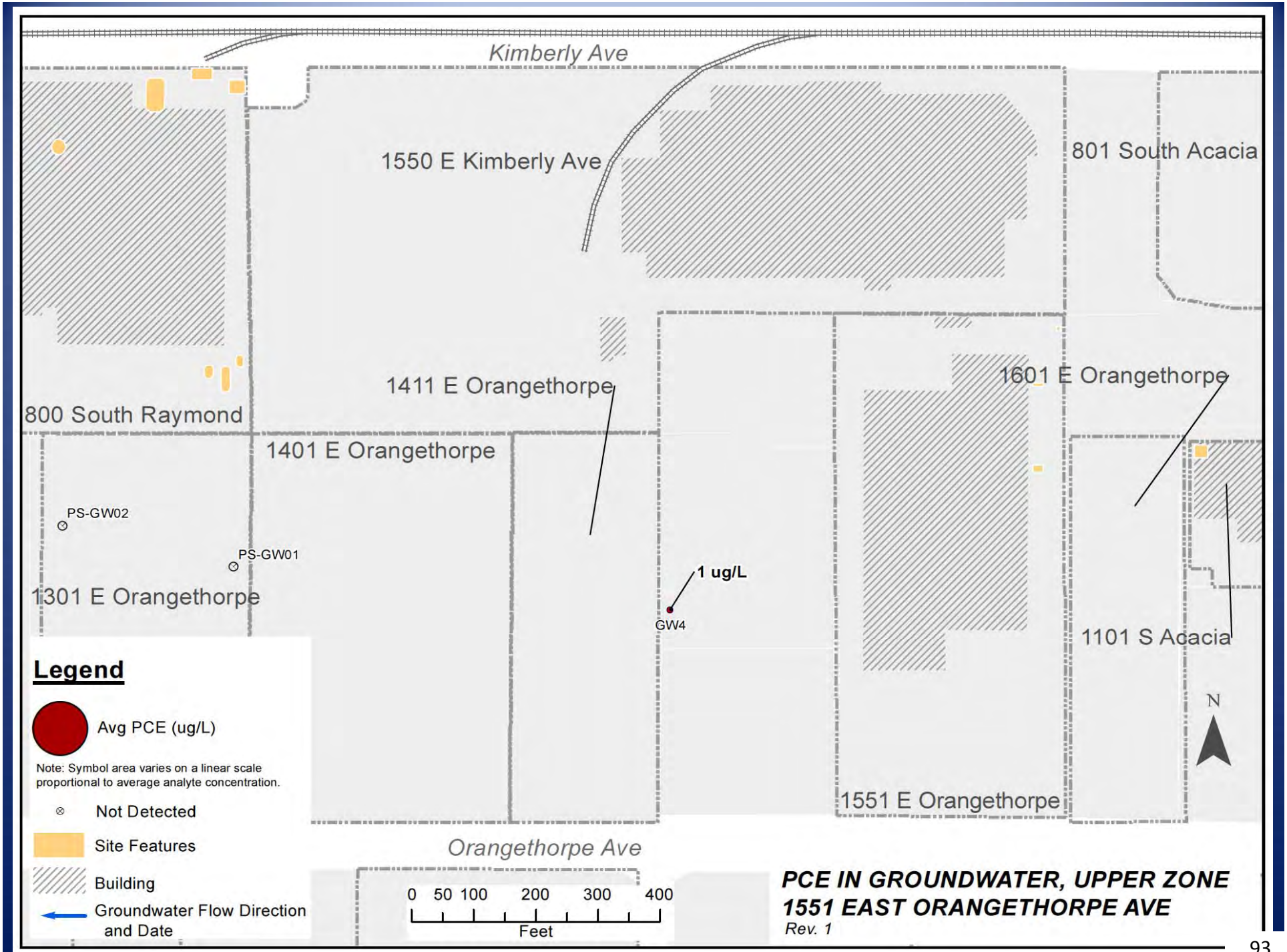
Summary of Soil Gas Data

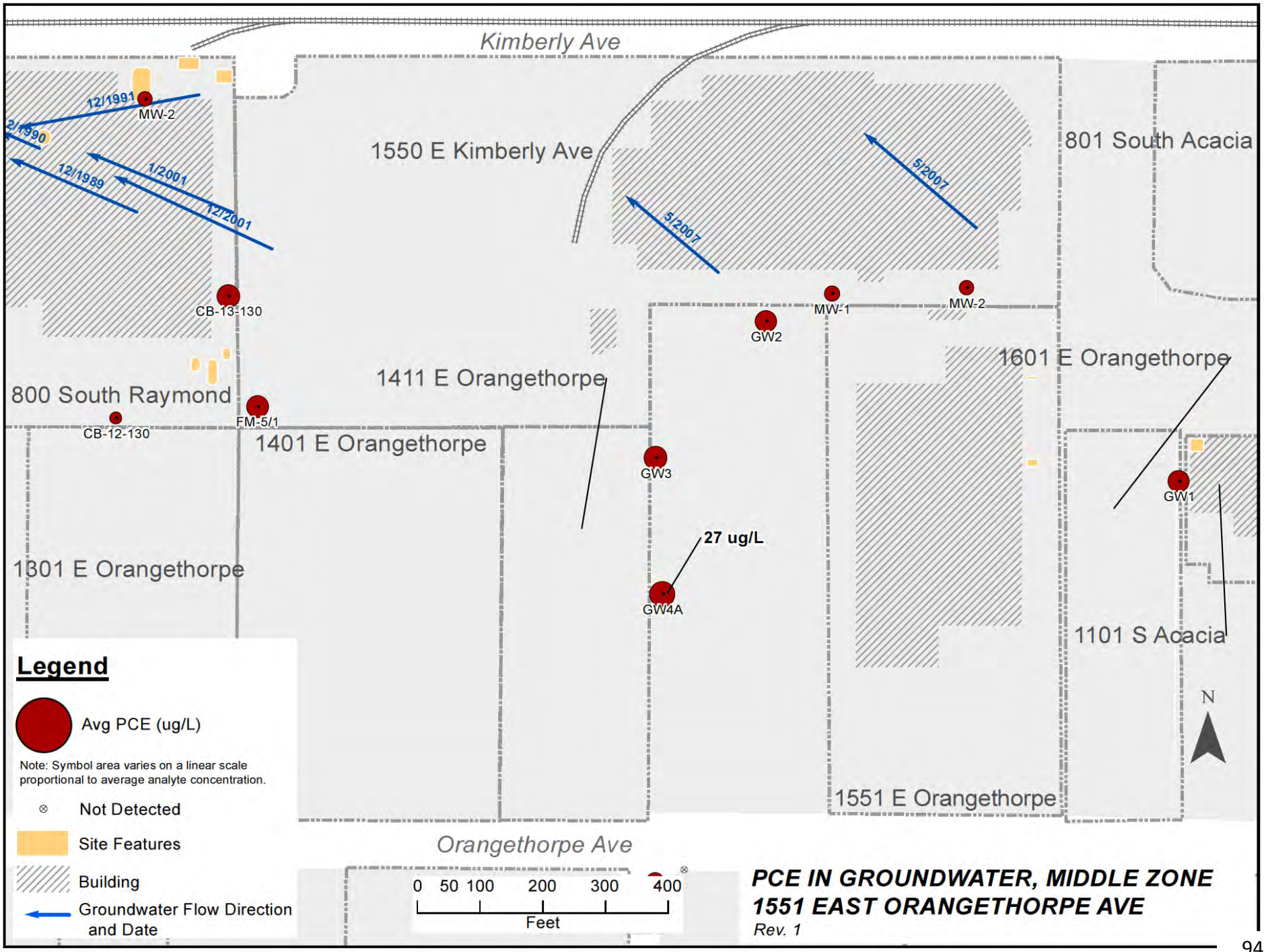
- TCE (710 ug/L), PCE (4,200 ug/L), 1,1,1-TCA (83 ug/L), and 1,1-DCE (460 ug/L) were detected
- Samples were collected beneath the building where TCE, PCE, and 1,1,1-TCA were used
- Concentrations are many-fold higher than on the Johnson Controls site [data are unavailable on the other nearby sites]

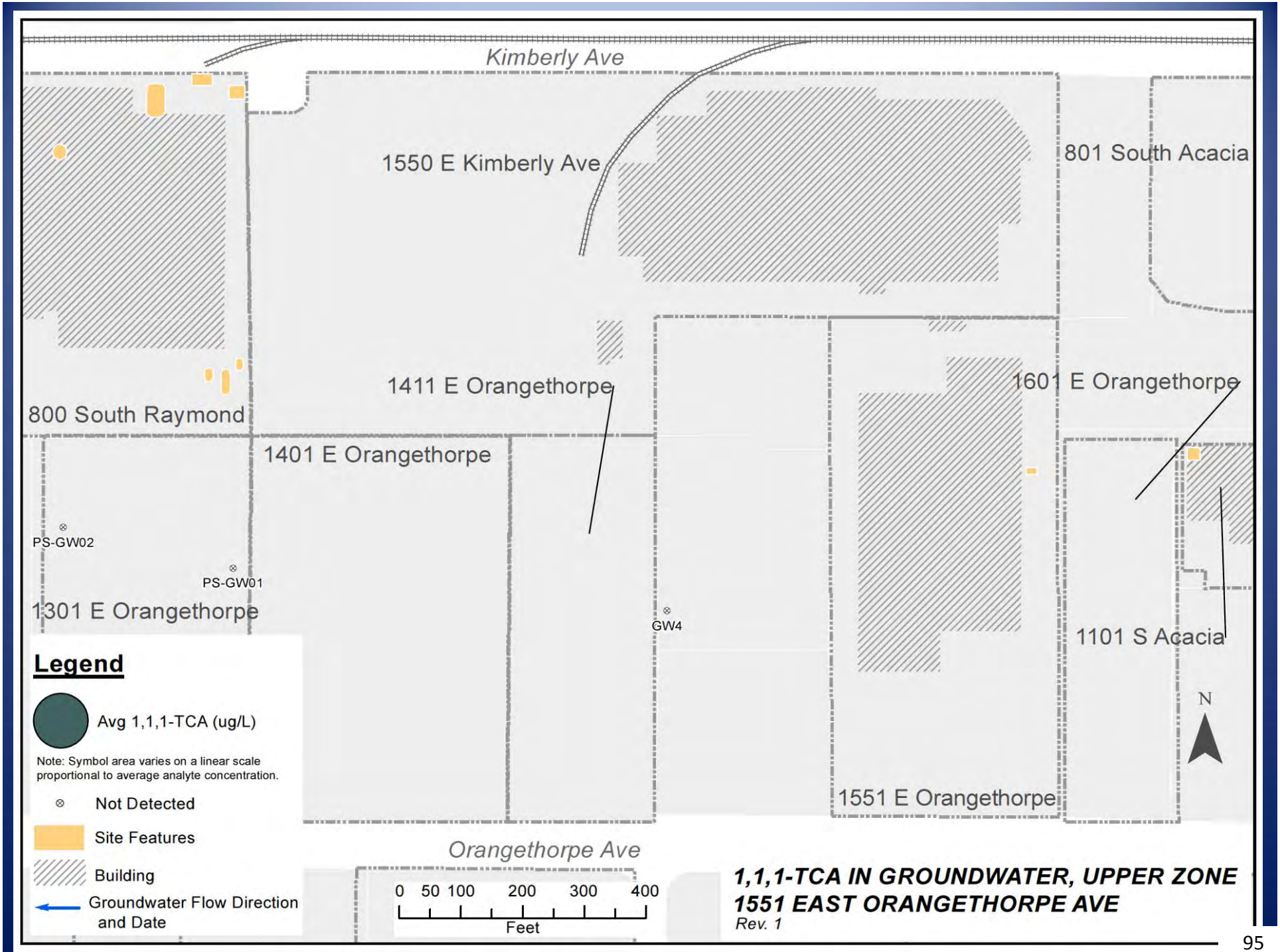
Groundwater

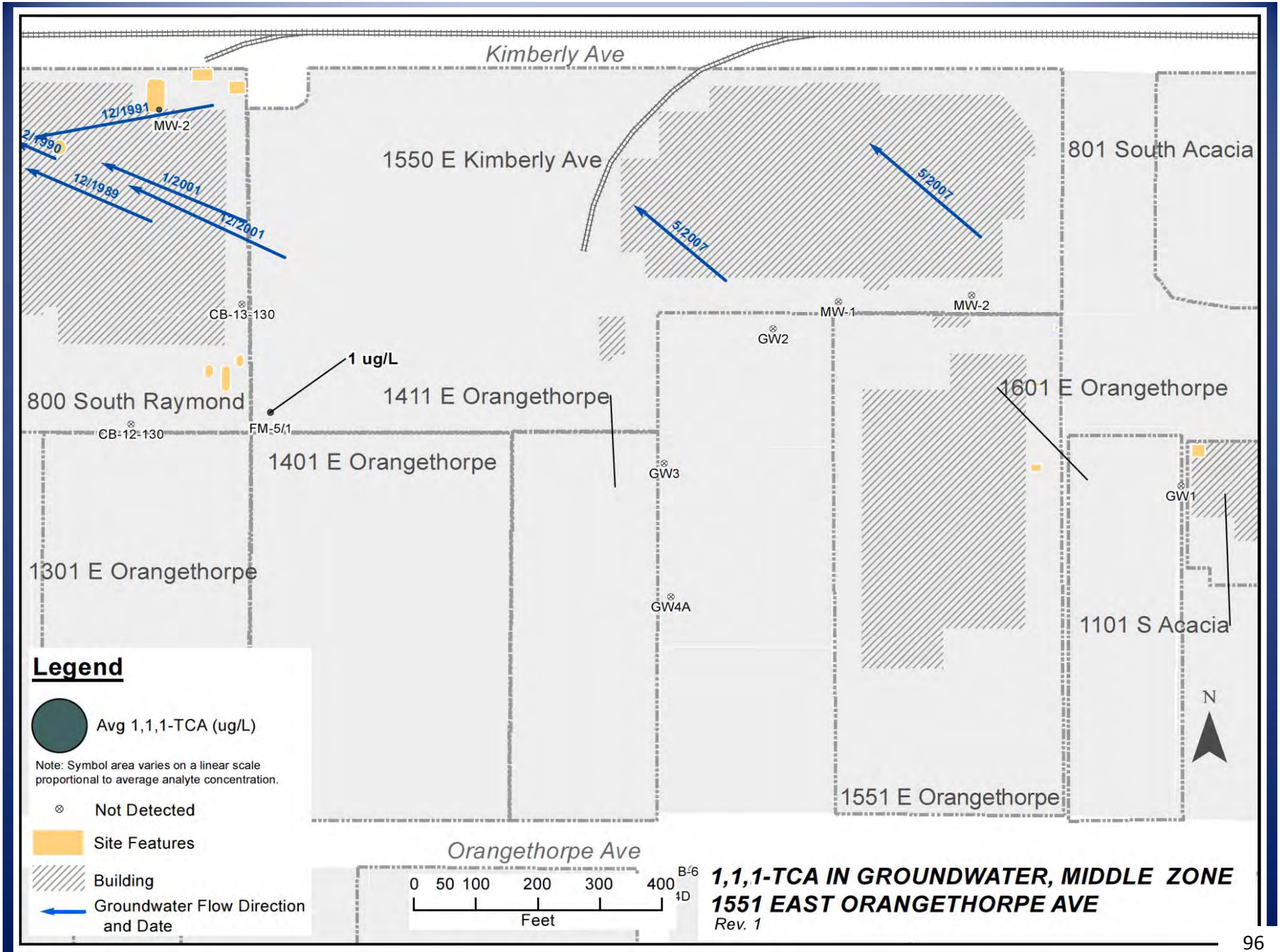

Kimberly Ave
1550 E Kimberly Ave
801 South Acacia
1411 E Orangethorpe
1601 E Orangethorpe
800 South Raymond
1401 E Orangethorpe
PS-GW02
PS-GW01
54 ug/L
1301 E Orangethorpe
GW4
1101 S Acacia
N
Legend
Avg TCE (ug/L)
Note: Symbol area varies on a linear scale proportional to average analyte concentration.
Not Detected
Site Features
Building
Groundwater Flow Direction and Date
1551 E Orangethorpe
Orangethorpe Ave
0 50 100 200 300 400
Feet
TCE IN GROUNDWATER, UPPER ZONE
1551 EAST ORANGETHORPE AVE
Rev. 1

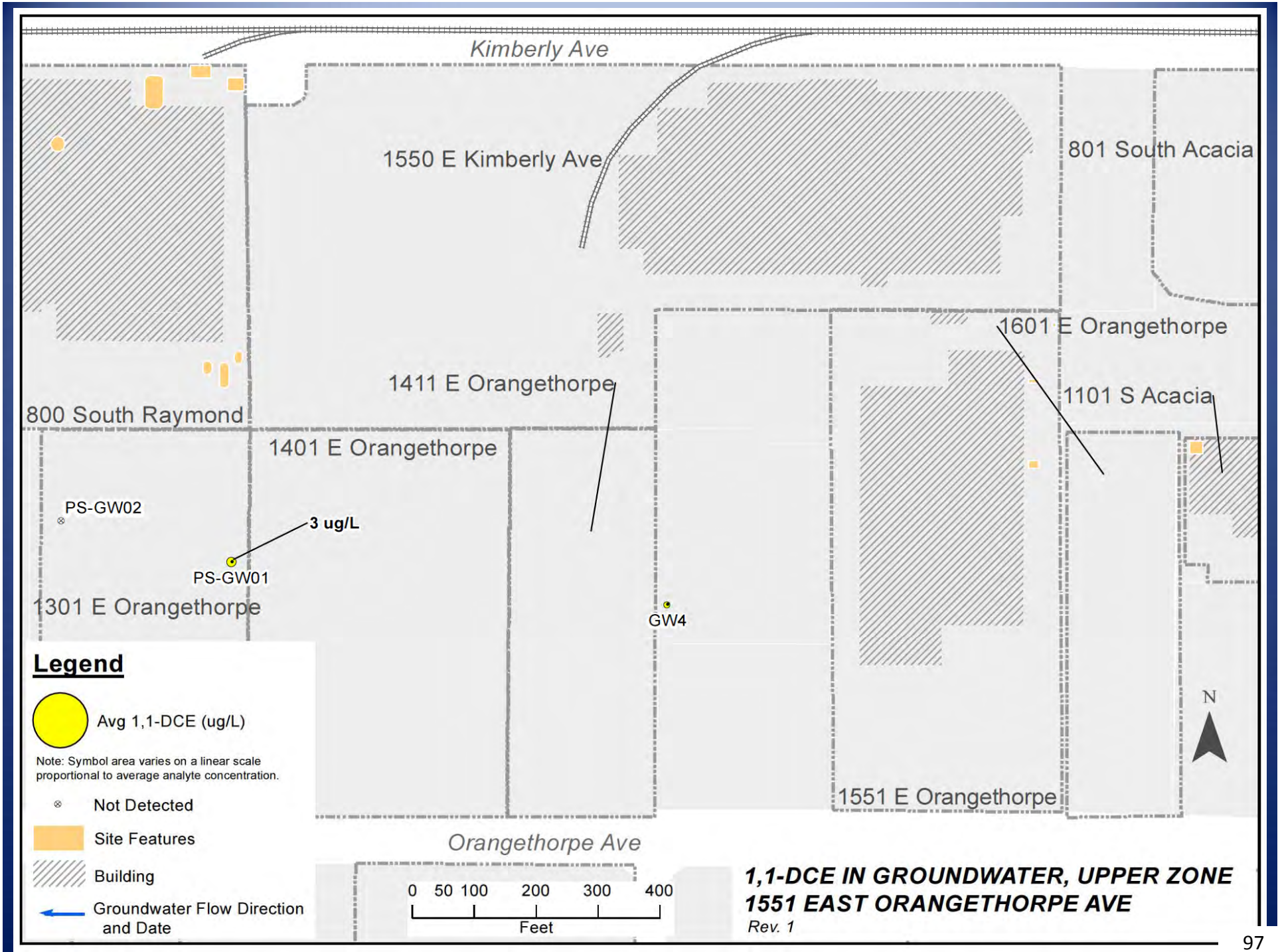

Kimberly Ave
1550 E Kimberly Ave
801 South Acacia
800 South Raymond
12/1991
2/1990
12/1989
1/2001
12/2001
5/2007
5/2007
MW-2
CB-13-130
1,200 ug/L
CB-12-130
FM-5/1
MW-1
MW-2
GW2
1411 E Orangethorpe
1601 E Orangethorpe
1401 E Orangethorpe
GW3
GW1
1301 E Orangethorpe
GW4A
1101 S Acacia
1551 E Orangethorpe
Orangethorpe Ave
B-64
N
Legend
Avg TCE (ug/L)
Note: Symbol area varies on a linear scale proportional to average analyte concentration.
Not Detected
Site Features
Building
Groundwater Flow Direction and Date
0 50 100 200 300 400
Feet
TCE IN GROUNDWATER, MIDDLE ZONE
1551 EAST ORANGETHORPE AVE
Rev. 1

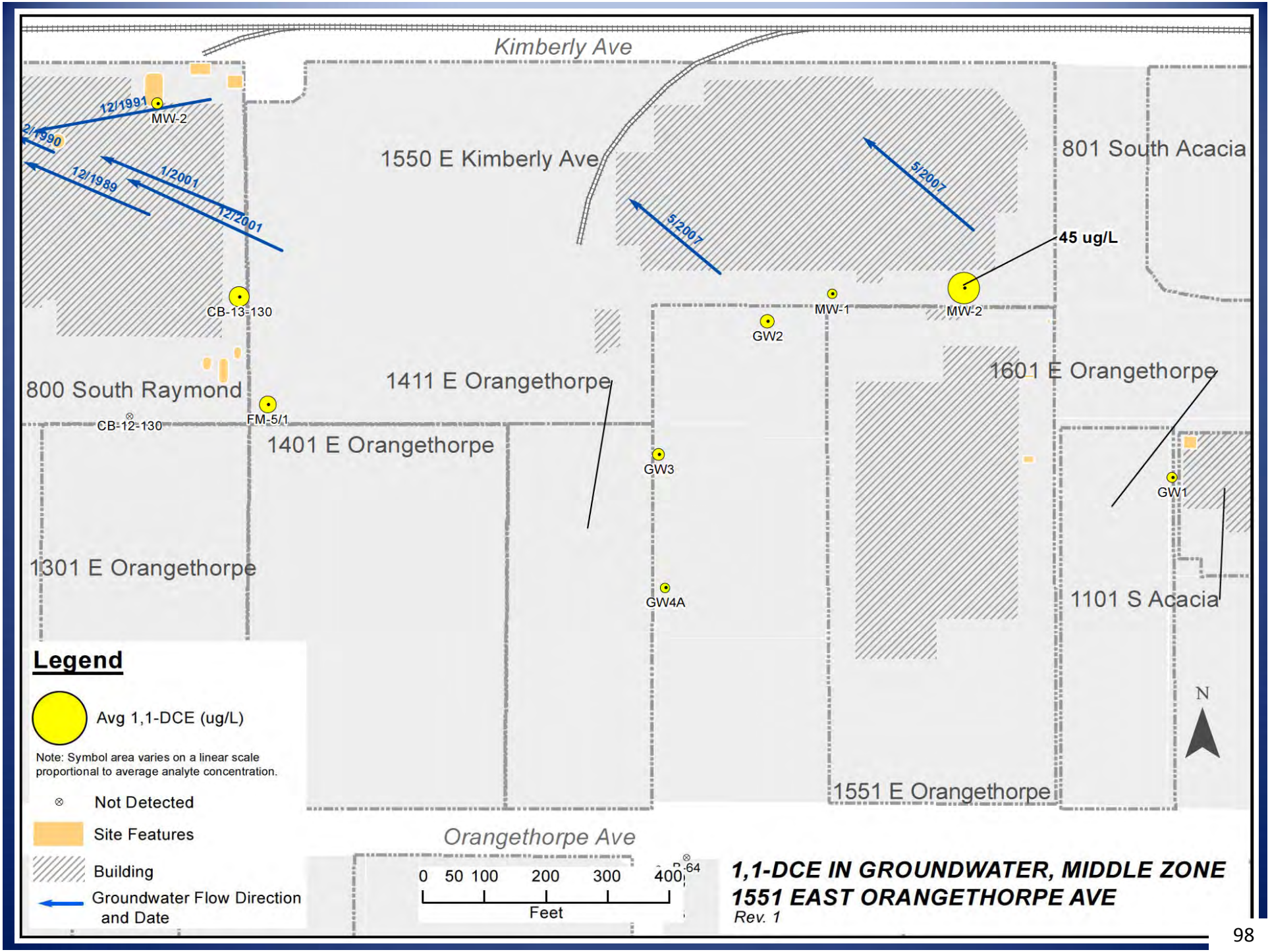

Kimberly Ave
1550 E Kimberly Ave
801 South Acacia
1411 E Orangethorpe
1601 E Orangethorpe
800 South Raymond
1401 E Orangethorpe
PS-GW02
PS-GW01
1301 E Orangethorpe
1 ug/L
GW4
1101 S Acacia
N
Legend
Avg PCE (ug/L)
Note: Symbol area varies on a linear scale proportional to average analyte concentration.
Not Detected
Site Features
Building
Groundwater Flow Direction and Date
1551 E Orangethorpe
Orangethorpe Ave
0 50 100 200 300 400
Feet
PCE IN GROUNDWATER, UPPER ZONE
1551 EAST ORANGETHORPE AVE
Rev. 1

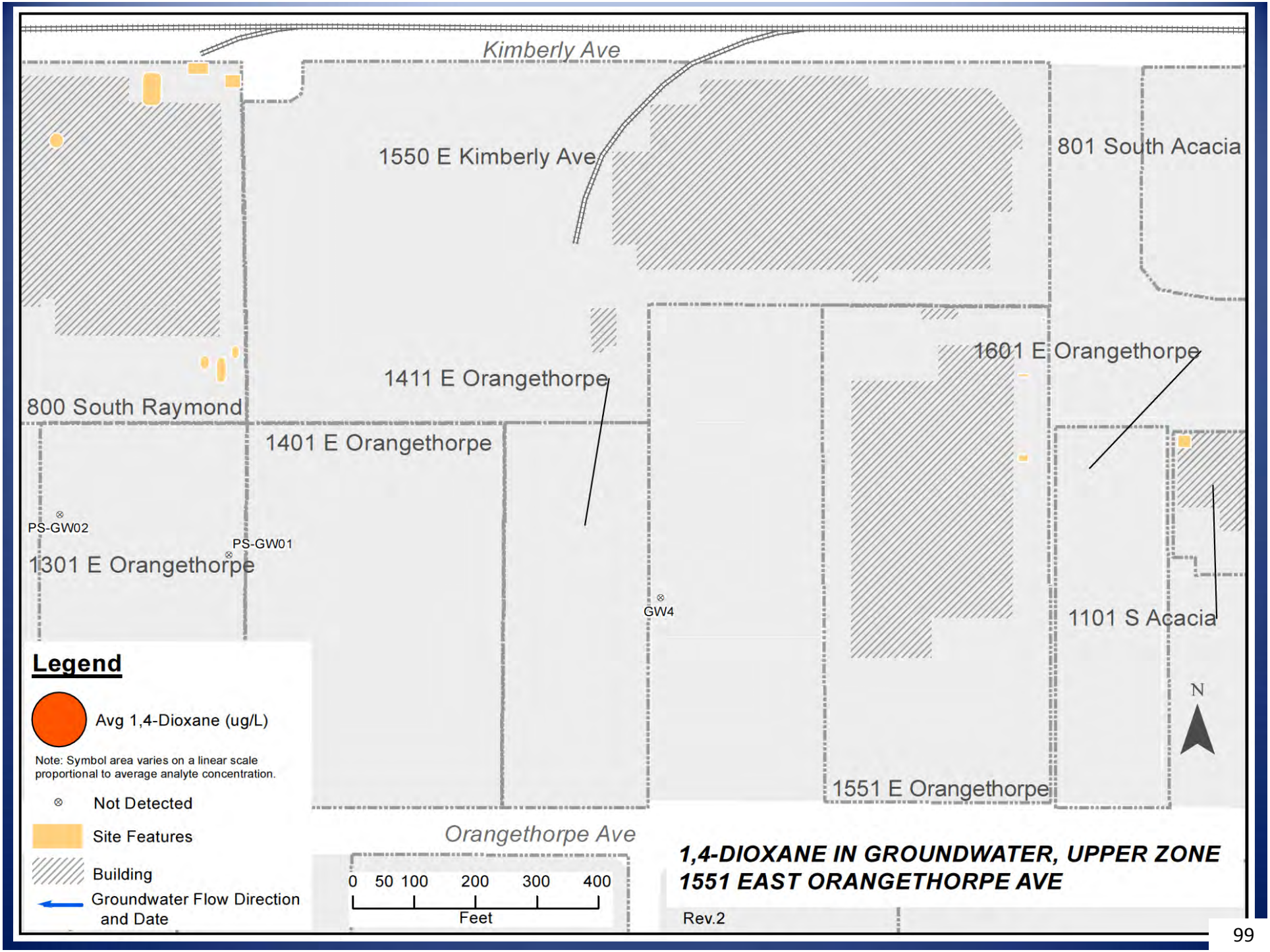

Kimberly Ave
1550 E Kimberly Ave
801 South Acacia
12/1991
MW-2
2/1990
12/1989
1/2001
12/2001
5/2007
5/2007
CB-13-130
MW-1
MW-2
GW2
1601 E Orangethorpe
1411 E Orangethorpe
800 South Raymond
FM-5/1
CB-12-130
1401 E Orangethorpe
GW3
GW1
27 ug/L
GW4A
1301 E Orangethorpe
1101 S Acacia
N
1551 E Orangethorpe
Orangethorpe Ave
Legend
Avg PCE (ug/L)
Note: Symbol area varies on a linear scale proportional to average analyte concentration.
Not Detected
Site Features
Building
Groundwater Flow Direction and Date
0 50 100 200 300 400
Feet
PCE IN GROUNDWATER, MIDDLE ZONE
1551 EAST ORANGETHORPE AVE
Rev. 1

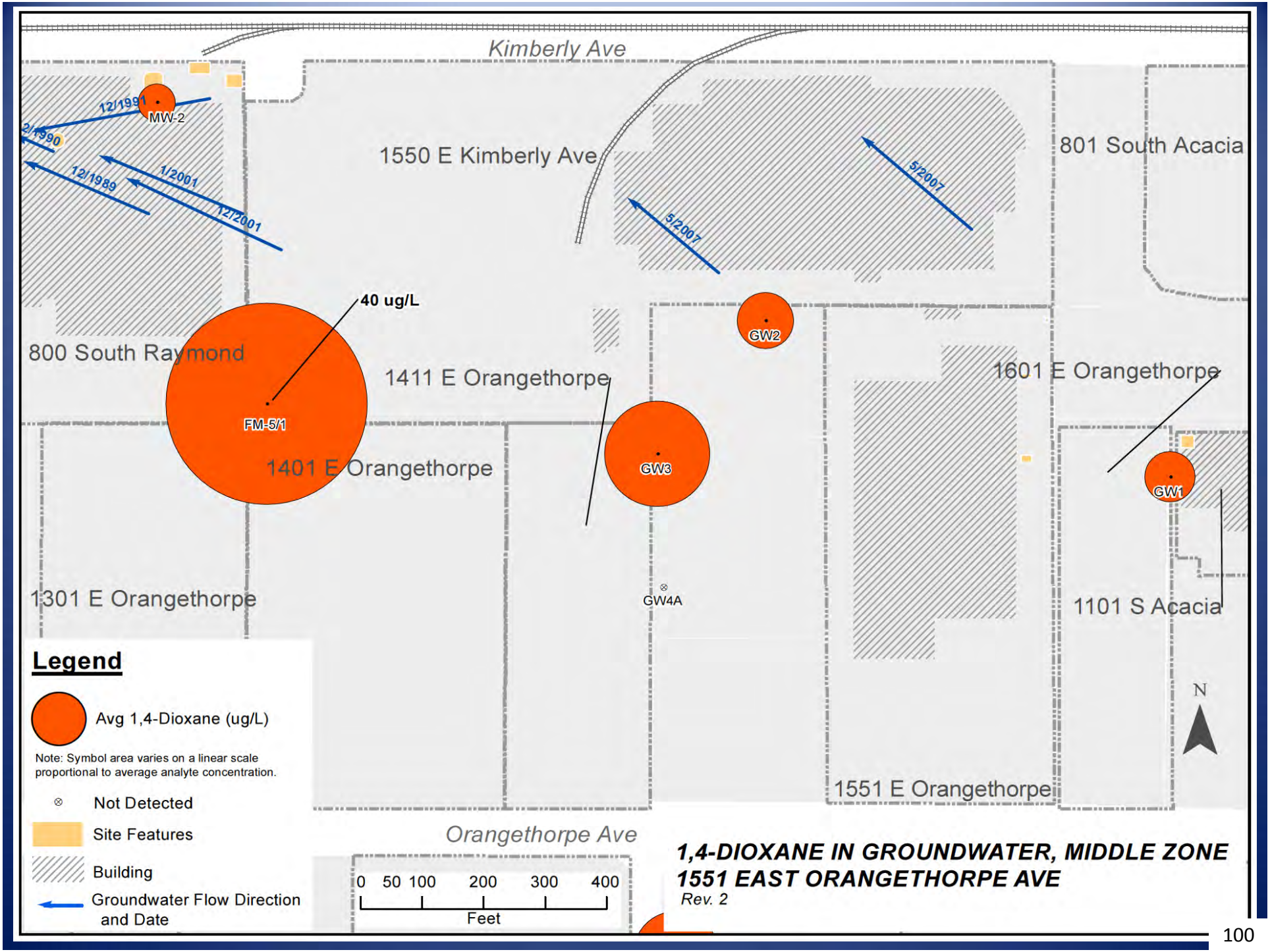

Kimberly Ave
1550 E Kimberly Ave
801 South Acacia
1411 E Orangethorpe
1601 E Orangethorpe
800 South Raymond
1401 E Orangethorpe
PS-GW02
PS-GW01
1301 E Orangethorpe
GW4
1101 S Acacia
N
Legend
Avg 1,1,1-TCA (ug/L)
Note: Symbol area varies on a linear scale proportional to average analyte concentration.
Not Detected
Site Features
Building
Groundwater Flow Direction and Date
1551 E Orangethorpe
Orangethorpe Ave
0 50 100 200 300 400
Feet
1,1,1-TCA IN GROUNDWATER, UPPER ZONE
1551 EAST ORANGETHORPE AVE
Rev. 1

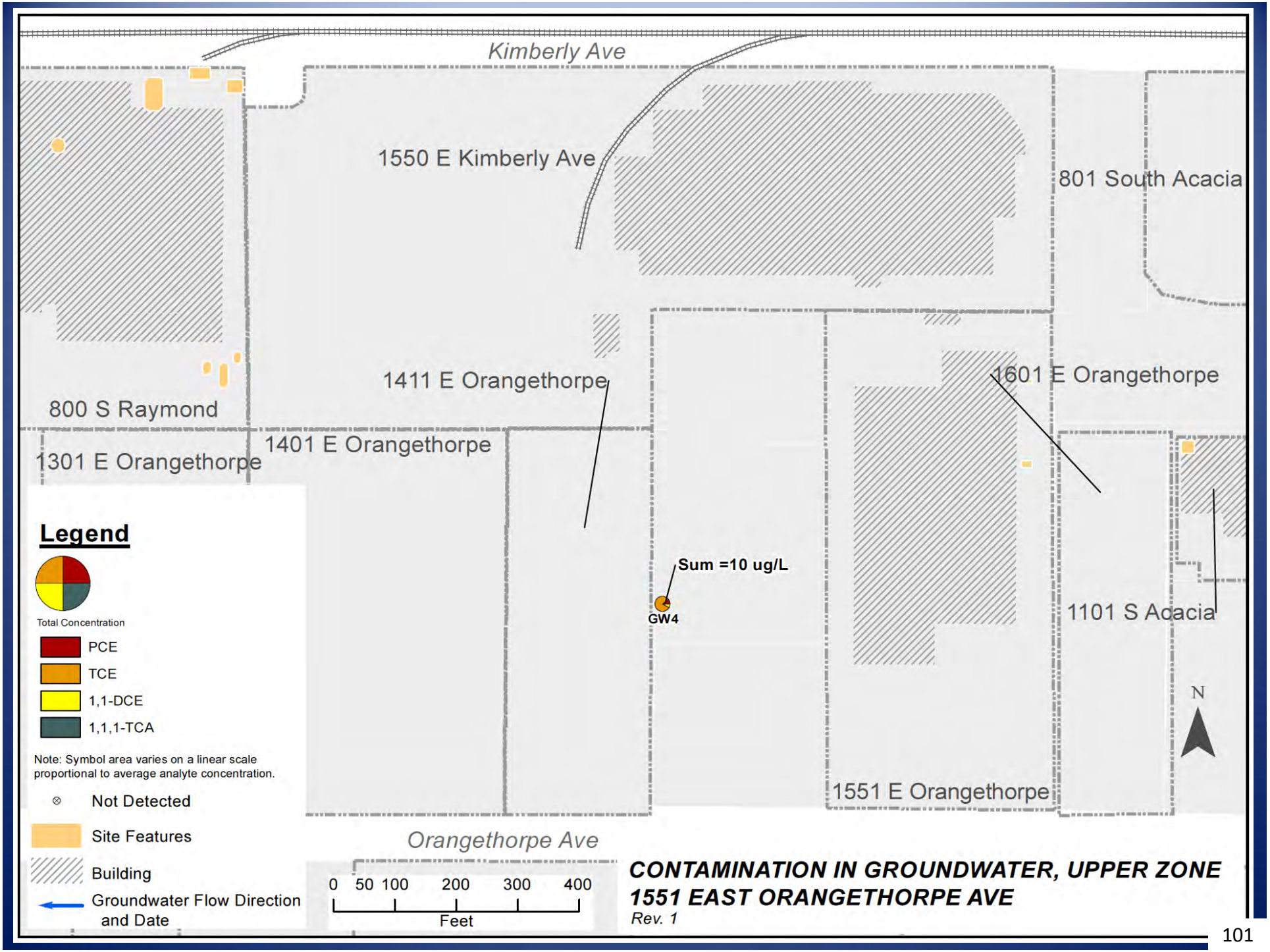

Kimberly Ave
12/1991
MW-2
2/1990
12/1989
1/2001
12/2001
1550 E Kimberly Ave
5/2007
5/2007
801 South Acacia
CB-13-130
MW-1
MW-2
GW2
1 ug/L
800 South Raymond
1411 E Orangethorpe
1601 E Orangethorpe
CB-12-130
FM-5/1
1401 E Orangethorpe
GW3
GW1
1301 E Orangethorpe
GW4A
1101 S Acacia
Legend
Avg 1,1,1-TCA (ug/L)
Note: Symbol area varies on a linear scale proportional to average analyte concentration.
Not Detected
Site Features
Building
Groundwater Flow Direction and Date
N
1551 E Orangethorpe
Orangethorpe Ave
0 50 100 200 300 400
Feet
1,1,1-TCA IN GROUNDWATER, MIDDLE ZONE
1551 EAST ORANGETHORPE AVE
Rev. 1

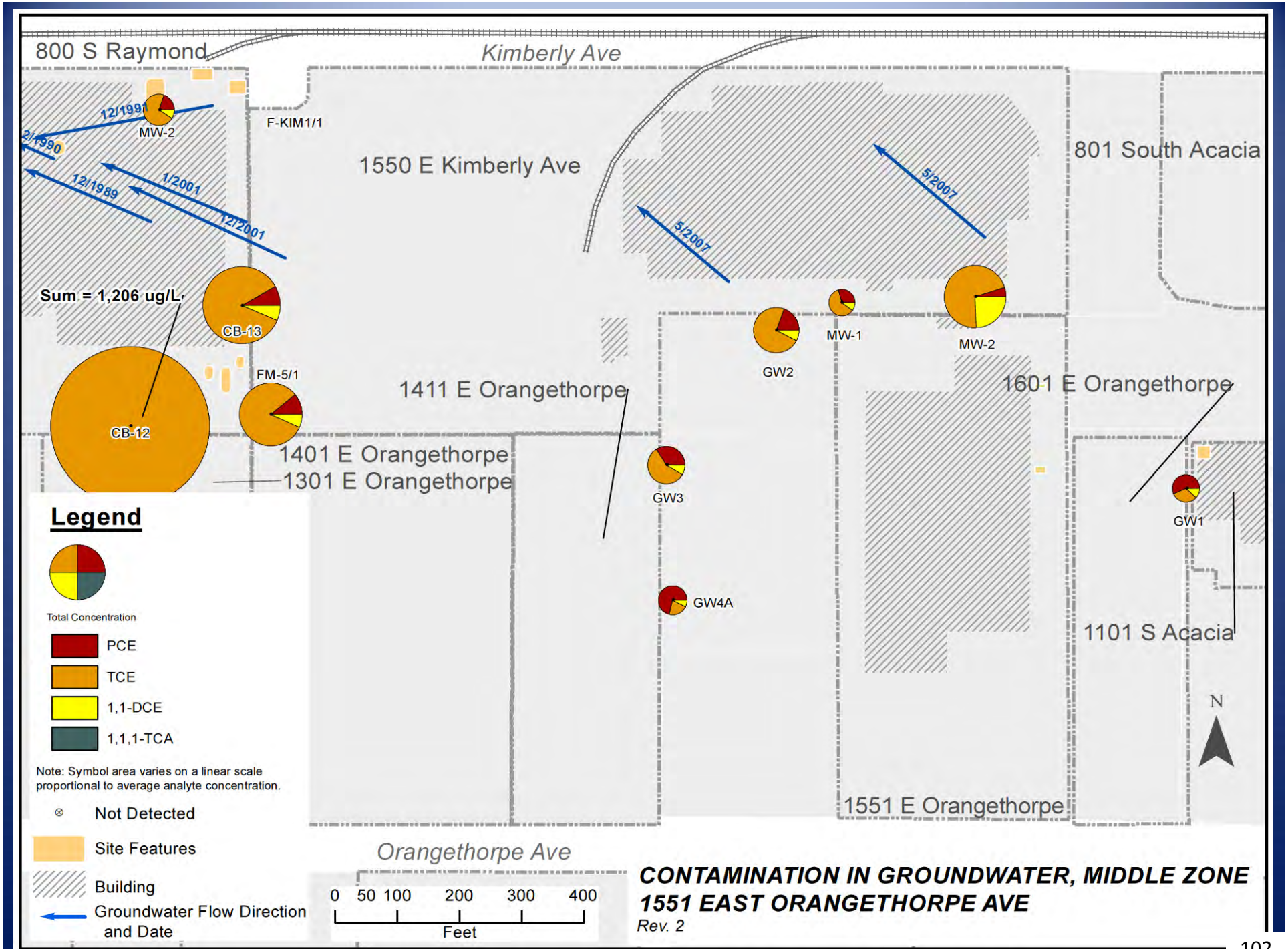

Kimberly Ave
1550 E Kimberly Ave
801 South Acacia
1601 E Orangethorpe
1411 E Orangethorpe
1101 S Acacia
800 South Raymond
1401 E Orangethorpe
PS-GW02
3 ug/L
PS-GW01
1301 E Orangethorpe
GW4
N
1551 E Orangethorpe
Orangethorpe Ave
Legend
Avg 1,1-DCE (ug/L)
Note: Symbol area varies on a linear scale proportional to average analyte concentration.
Not Detected
Site Features
Building
Groundwater Flow Direction and Date
0 50 100 200 300 400
Feet
1,1-DCE IN GROUNDWATER, UPPER ZONE
1551 EAST ORANGETHORPE AVE
Rev. 1

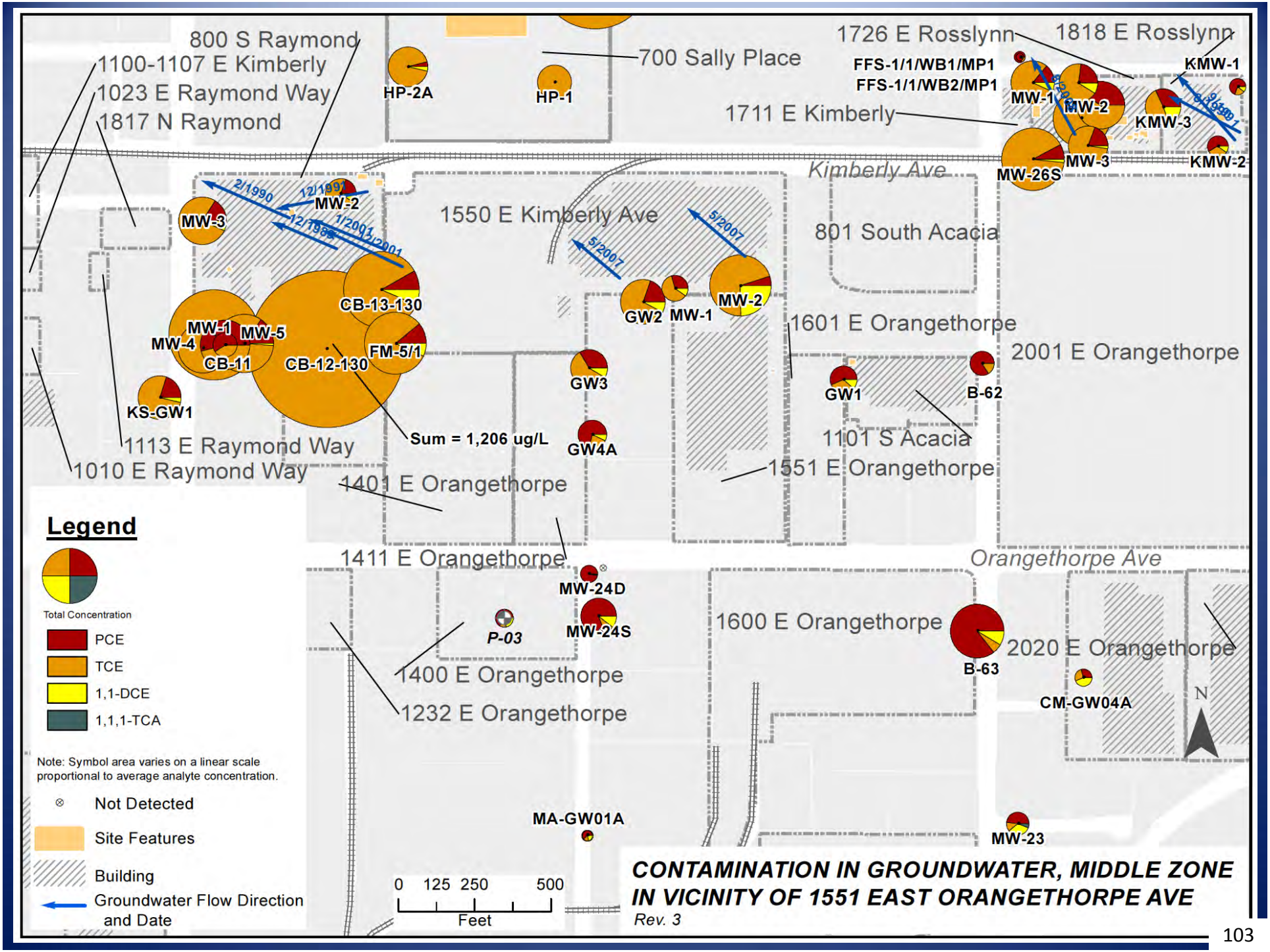

Kimberly Ave
1550 E Kimberly Ave
801 South Acacia
12/1991
MW-2
2/1990
12/1989
1/2001
12/2001
5/2007
5/2007
45 ug/L
CB-13-130
MW-1
MW-2
GW2
800 South Raymond
1411 E Orangethorpe
1601 E Orangethorpe
CB-12-130
FM-5/1
1401 E Orangethorpe
GW3
GW1
1301 E Orangethorpe
GW4A
1101 S Acacia
N
Legend
Avg 1,1-DCE (ug/L)
Note: Symbol area varies on a linear scale proportional to average analyte concentration.
Not Detected
Site Features
Building
Groundwater Flow Direction and Date
1551 E Orangethorpe
Orangethorpe Ave
0 50 100 200 300 400
Feet
1,1-DCE IN GROUNDWATER, MIDDLE ZONE
1551 EAST ORANGETHORPE AVE
Rev. 1


Kimberly Ave
1550 E Kimberly Ave
801 South Acacia
1601 E Orangethorpe
1411 E Orangethorpe
800 South Raymond
1401 E Orangethorpe
PS-GW02
PS-GW01
1301 E Orangethorpe
GW4
1101 S Acacia
N
Legend
Avg 1,4-Dioxane (ug/L)
Note: Symbol area varies on a linear scale proportional to average analyte concentration.
Not Detected
Site Features
Building
Groundwater Flow Direction and Date
1551 E Orangethorpe
Orangethorpe Ave
0 50 100 200 300 400
Feet
1,4-DIOXANE IN GROUNDWATER, UPPER ZONE
1551 EAST ORANGETHORPE AVE
Rev.2


Kimberly Ave
1550 E Kimberly Ave
801 South Acacia
800 South Raymond
1411 E Orangethorpe
1601 E Orangethorpe
1401 E Orangethorpe
1301 E Orangethorpe
1101 S Acacia
1551 E Orangethorpe
Orangethorpe Ave
MW-2
12/1991
2/1990
12/1989
1/2001
12/2001
5/2007
5/2007
40 ug/L
FM-5/1
GW2
GW3
GW4A
GW1
N
Legend
Avg 1,4-Dioxane (ug/L)
Note: Symbol area varies on a linear scale proportional to average analyte concentration.
Not Detected
Site Features
Building
Groundwater Flow Direction and Date
0 50 100 200 300 400
Feet
1,4-DIOXANE IN GROUNDWATER, MIDDLE ZONE
1551 EAST ORANGETHORPE AVE
Rev. 2


Kimberly Ave
1550 E Kimberly Ave
801 South Acacia
1411 E Orangethorpe
1601 E Orangethorpe
800 S Raymond
1401 E Orangethorpe
1301 E Orangethorpe
Legend
Total Concentration
PCE
TCE
1,1-DCE
1,1,1-TCA
Note: Symbol area varies on a linear scale proportional to average analyte concentration.
Not Detected
Site Features
Building
Groundwater Flow Direction and Date
Sum =10 ug/L
GW4
1101 S Acacia
N
1551 E Orangethorpe
Orangethorpe Ave
0 50 100 200 300 400
Feet
CONTAMINATION IN GROUNDWATER, UPPER ZONE
1551 EAST ORANGETHORPE AVE
Rev. 1


800 S Raymond
Kimberly Ave
F-KIM1/1
MW-2
12/1990
2/1990
12/1989
1/2001
12/2001
1550 E Kimberly Ave
5/2007
5/2007
801 South Acacia
Sum = 1,206 ug/L
CB-13
CB-12
FM-5/1
GW2
MW-1
MW-2
1411 E Orangethorpe
1601 E Orangethorpe
1401 E Orangethorpe
1301 E Orangethorpe
GW3
GW1
GW4A
1101 S Acacia
N
Legend
Total Concentration
PCE
TCE
1,1-DCE
1,1,1-TCA
Note: Symbol area varies on a linear scale proportional to average analyte concentration.
Not Detected
Site Features
Building
Groundwater Flow Direction and Date
1551 E Orangethorpe
Orangethorpe Ave
0 50 100 200 300 400
Feet
CONTAMINATION IN GROUNDWATER, MIDDLE ZONE
1551 EAST ORANGETHORPE AVE
Rev. 2


800 S Raymond
1100-1107 E Kimberly
1023 E Raymond Way
1817 N Raymond
HP-2A
HP-1
700 Sally Place
1726 E Rosslynn
1818 E Rosslynn
FFS-1/1/WB1/MP1
FFS-1/1/WB2/MP1
MW-1
MW-2
KMW-1
KMW-3
KMW-2
1711 E Kimberly
MW-26S
MW-3
Kimberly Ave
1550 E Kimberly Ave
801 South Acacia
2/1990
12/1992
12/1994
1/2001
12/2001
5/2007
MW-3
MW-2
CB-13-130
MW-1
MW-5
MW-4
CB-11
CB-12-130
FM-5/1
KS-GW1
GW2
MW-1
MW-2
1601 E Orangethorpe
2001 E Orangethorpe
GW3
GW1
B-62
Sum = 1,206 ug/L
GW4A
1113 E Raymond Way
1010 E Raymond Way
1101 S Acacia
1551 E Orangethorpe
1401 E Orangethorpe
1411 E Orangethorpe
Orangethorpe Ave
MW-24D
MW-24S
P-03
1600 E Orangethorpe
2020 E Orangethorpe
B-63
CM-GW04A
1400 E Orangethorpe
1232 E Orangethorpe
N
Legend
Total Concentration
PCE
TCE
1,1-DCE
1,1,1-TCA
Note: Symbol area varies on a linear scale proportional to average analyte concentration.
Not Detected
Site Features
Building
Groundwater Flow Direction and Date
MA-GW01A
MW-23
0 125 250 500
Feet
CONTAMINATION IN GROUNDWATER, MIDDLE ZONE
IN VICINITY OF 1551 EAST ORANGETHORPE AVE
Rev. 3

Summary of Groundwater Data

- GW-1 shows groundwater quality near the Jonathan Manufacturing release
- JCI MW-2 and GW-2 are downgradient of release areas at Arnold Engineering

Summary of Groundwater Data

- JCI MW-2 and GW-2 had concentrations of TCE and 1,1-DCE many times greater than GW-1
- Because 1,4-dioxane was not measured in JCI wells, the impact of the Arnold Engineering site is not clearly indicated, but it is likely that 1,4-dioxane from the site has impacted groundwater

Remediation

- The northern and southern clarifiers were removed in 1994
- SVE was conducted at the southern clarifier in 1995 for approximately 3 months
- SVE is being conducted to a depth of 60 feet beneath the northern part of the building (since 2008), but has removed less than 100 pounds
- No remediation of groundwater has occurred

Summary of Opinion

- Arnold Engineering and its successor company, Integrated Specialties, occupied the site from 1960-1988
- Performed etching of metal for the electronics industry
- Process involved cutting metal parts, cleaning, coating with a photoresist mask, degreasing, coating, baking/hardening, etching, and stripping
- Chemical use included chlorinated solvents, caustics, water rinses and chlorine

Summary of Opinion

- Chlorinated solvents were used from approximately 1961 to 1988 for degreasing and stripping
- Chlorinated solvents were dripped and spilled in the degreasing and stripping rooms onto uncoated floors and was rinsed into sewers
- Metal sheets that had been exposed to the solvents were rinsed and wastewater drained into sewers

Summary of Opinion

- 1994 and 1995 – PCE, TCE, 1,1,1-TCA and 1,1-DCE were found in soil beneath southern clarifier
- 2007 – PCE, TCE, 1,1,1-TCA, and 1,1-DCE were found in soil gas beneath the building

Summary of Opinion

- Concentrations of TCE, and 1,1-DCE are higher in downgradient wells than in upgradient GW-1
- Contaminants from the Arnold Engineering site have commingled with contaminants from upgradient sites (AC Products, Crucible, and perhaps Jonathan Manufacturing)

Maximum Observed Concentrations

	Soil	Soil Gas	Upper Zone GW	Middle Zone GW
TCE	3,400	710.8	8.3	290.0
PCE	96,000	4,200	1.1	28.3
1,1,1-TCA	19,600	83.5	0	0
1,1-DCE	3,100	460	0.9	80.0
1,4-dioxane		0	0	11.5
Cis-1,2-DCE	0	32	0	0.8

Summary of Opinion

- Soil contamination near the southern degreaser was partially remediated by the property owner using SVE in 1995
- Soil remediation by the property owner beneath the northern part of the building began in 2008
- There has been no remediation of the groundwater

- SVE system constructed by Red Eagle Properties to 40 feet bgs and operated from August 15-November 27 1995, but this was not sufficient to prevent the site from being a continuing source to groundwater
- SVE system operated from January 2008-present, but will not be effective at depths greater than 60 feet

Summary

- TCE, PCE, 1,1,1-TCA, 1,1-DCE and 1,4-Dioxane have migrated downgradient from site, where they have commingled with contaminants from several other sites
  - Moore Business Forms
  - Kester Solder
  - Norhtrop's Y-12

Summary

- COCs in the groundwater from the Arnold Engineering site will be captured by EW-3, EW-2, or EW-2A